Blade up Sun is set to roll out a blade and low-end server, storage arrays and enhancements to its high-end boxes. PAGE 8.

Changes afoot at Sprint? Speculation swirls that CEO William Esrey will step down. PAGE 10.

NetworkWorld

The leader in network knowledge ■ www.nwfusion.com

February 3, 2003 ■ Volume 20, Number 5

TESTING

10Gig Ethernet switches

The new, standards-based 10G Ethernet switches are out, and we got first crack at them. Of the five we tested, only Force10's E1200 delivered true wire-speed throughput. Page 41.

While Force10 achieved line-rate throughput, switches from Avaya, Foundry and HP topped out at 8G bit/sec.

Per-port throughput (64-byte frames per second)

Theoretical maximum	14,880,952
Avaya (2 ports)	11,218,836
Force10 (4 ports)	14,880,950
Foundry (2 ports)	12,889,594
Foundry (4 ports)	12,868,895
HP (4 ports)	11,741,994

Force10's E1200

Next 'Slammer' could be worse

■ BY ELLEN MESSMER

As cleanup of the MS-SQL Slammer worm continued last week, talk among security experts centered on two facets of the attack that might portend greater trouble: the remarkable speed with which Slammer spread, and the idea that future versions might carry a nefarious payload.

Experts fear future variations could wipe out files or worse.

"It could delete [a] whole database," says Ed Skoudis, vice president of security strategy at consultancy Predictive Systems. Extending

See Slammer, page 57

■ **Columnists Kevin Tolly (page 20), Scott Bradner (page 24) and Mark Gibbs (page 58) weigh in on the Slammer worm.**

Smaller ComNet soldiers on

■ BY NETWORK WORLD STAFF

WASHINGTON, D.C. — The ComNet Conference & Expo last week celebrated a bittersweet 25th birthday: Sessions and exhibitors focused on the hottest industry subjects from security to convergence to Web services, but the energy level was low because of sparse vendor and attendee turnout.

Missing from the event were industry bellwethers such as Cisco, Nortel and AT&T, that have made ComNet a network industry mecca in years past. But like other trade shows, ComNet has been hit hard by tight corporate travel budgets and the industry downturn.

The crowd appeared to be much smaller than the 30,000 attendees expected by show organizers. The 141 exhibitors on hand represented a two-thirds drop off from two years ago.

Nevertheless, the show went on, featuring Daniel Mehan, CIO and assistant administrator for IS at the Federal Aviation Administration (FAA), among its keynote speakers. Attendees heard firsthand how the agency is attempting to secure its 40,000-seat network while relying increasingly on the Internet.

STAN BAROUH

■ **Wireless LAN security and 3G networks were among the topics being discussed by speakers and attendees. Page 16.**

■ **In our Reporter's Notebook, we look at the lighter side of the show. Page 16.**

Mehan spent much of his speech discussing security issues, including the recent MS-SQL Slammer attack. A combination of keeping up to date with patches, keeping workers trained and using a variety of antihacking strategies prevented the FAA's important computer systems from being harmed, he said. At the same time, he knows the agency isn't infallible.

"We can't promise you'll never get a cold," he said of the agency's security system. "But we have to

See ComNet, page 14

Lotus offers assurances to Domino customers

■ BY JOHN FONTANA

ORLANDO — Lotus started to regain momentum last week by throwing down the gauntlet to chief rival Microsoft and wooing end users with forthcoming products that promise to extend Domino's life and integrate the technology into a future collaboration platform.

Lotus surprised many of the more than 5,000 attendees at Lotusphere with just how far along it is in developing products that begin to integrate Domino and WebSphere, but also with its near-term commitment to the pure Domino platform.

With its product road map, Lotus also showed it is beginning to pull together its long-term strategy around collaboration with the sort of tools and software that Microsoft still is fumbling to develop and ship.

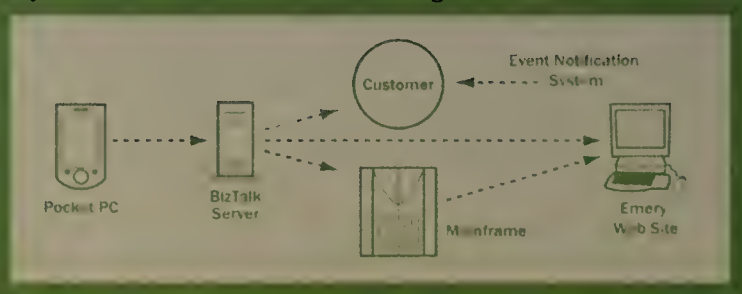
In the next 18 to 22 months, Lotus plans to ship two versions of Domino and a pair of

See Lotus, page 12

QUICKLY

Emery Forwarding uses .NET connected software from Microsoft to be an agile business.

Emery Forwarding, part of Menlo Worldwide, needed to integrate its new event notification software with the freight transportation and logistics system it uses in 200 countries. Using .NET connected software from Microsoft, it quickly integrated the new system with its legacy UNIX environment. The result: Emery now provides customers with real-time information about shipments and expects more than a 100% ROI in less than five months. Signed, sealed, and delivered.

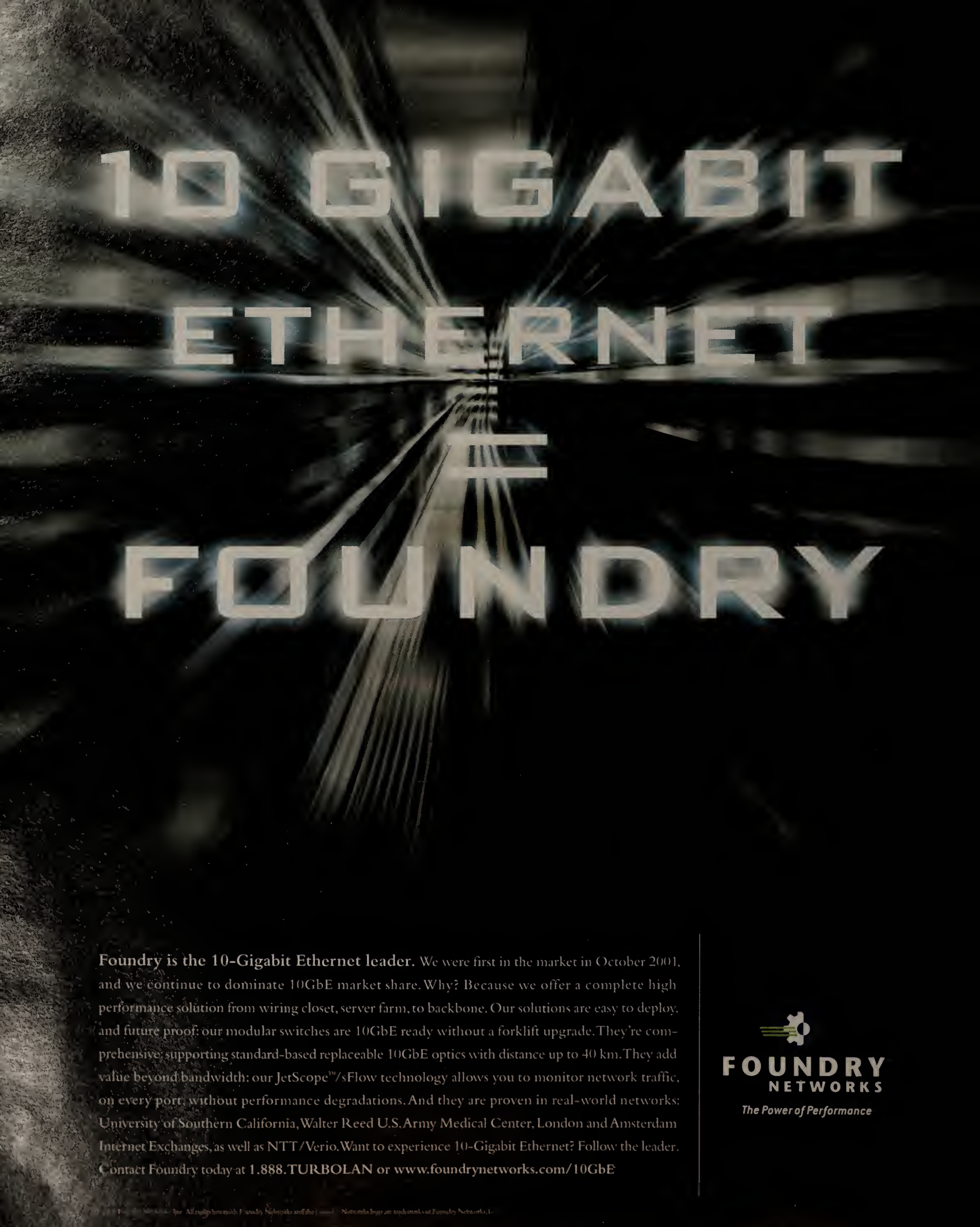


CONNECT THE ORCHESTRA

AND THE CONDUCTOR.

.NET connected software from Microsoft lets you quickly integrate all your enterprise applications, so you can automate your business processes. Your goal is to get all the aspects of your enterprise working in concert. Your reality is filled with disparate systems that clash or fail to connect altogether. .NET connected software from Microsoft provides powerful, visual tools that help you easily build and maintain an enterprise application integration solution based on industry standards such as XML. So it works with the applications you have, as well as those you adopt in the future. To learn more about Microsoft's EAI solutions go to **microsoft.com/integration** **Software for the Agile Business.**

Microsoft



Foundry is the 10-Gigabit Ethernet leader. We were first in the market in October 2001, and we continue to dominate 10GbE market share. Why? Because we offer a complete high performance solution from wiring closet, server farm, to backbone. Our solutions are easy to deploy, and future proof: our modular switches are 10GbE ready without a forklift upgrade. They're comprehensive: supporting standard-based replaceable 10GbE optics with distance up to 40 km. They add value beyond bandwidth: our JetScope™/sFlow technology allows you to monitor network traffic, on every port, without performance degradations. And they are proven in real-world networks: University of Southern California, Walter Reed U.S. Army Medical Center, London and Amsterdam Internet Exchanges, as well as NTT/Verio. Want to experience 10-Gigabit Ethernet? Follow the leader. Contact Foundry today at 1.888.TURBOLAN or www.foundrynetworks.com/10GbE

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2/3/03

NetworkWorld

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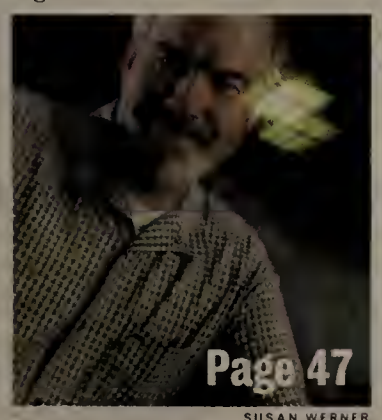


SUSAN WERNER

Toyota's Bill Strickland says an outsourced VPN was cost-effective and suited for the future.

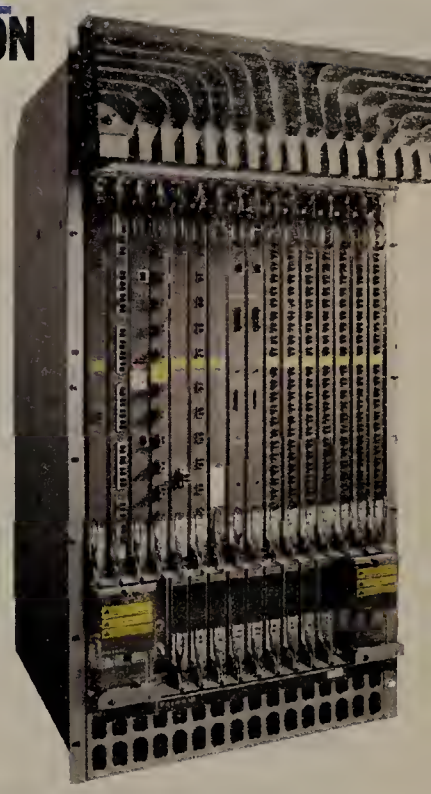
Features

Winner BLUE RIBBON

Testing 10G Ethernet switches:

We got our hands on five new 10G Ethernet switches and ran them through a battery of tests. Only Force10's E1200 came through with true 10G performance. But switches from HP, Foundry and Avaya offer enough bandwidth and features to make them preferable to link aggregation using Gigabit switches.

Page 41.



Force10's E1200 switch delivered line-rate performance.

Online: David Newman hosts a forum to discuss the results of his 10G Ethernet testing: **DocFinder: 4147**

Vocera Communication System 1.02 02

Offers Star Trek-like voice features over a wireless LAN.

Page 45.

NetworkWorldFusion

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Interactive

Webcast: Web services showdown

Last week we gathered Web services leaders BEA Systems, Microsoft, IBM and Oracle to field questions about their products, debate each other, and answer questions from the ComNet 2003 audience and our panel of experts. Listen to what they had to say about development tools, standards and interoperability across multiple operating systems.
DocFinder: 4146

Users react to SQL Slammer

What did ComNet attendees have to say about the recent Slammer attacks? Find out.
DocFinder: 4141

Review: Siemens SpeedStream 2524 Powerline Wireless DSL/Cable Router

Network World Test Alliance member James Gaskin puts Siemens' new HomePlug/wireless router through its paces in this online-exclusive review. **DocFinder: 4142**

Make way for media adapters

In his new weekly column, analyst Mike Wolf looks at media adapters, which make sharing PC and entertainment content easy.
DocFinder: 4143

Columnists

Compendium

How to respond to Slammer-like attacks
Fusion Executive Editor Adam Gaffin passes along the opinion of a Microsoft programmer, who says blaming systems administrators is not the way to go in handling these attacks. **DocFinder: 4144**

The Bleeding Edge

A look at new service revenue generation via IP services
Analyst Daniel Briere says the main problems today's service providers face are not a surprise to anyone who works in the telecom industry. **DocFinder: 4145**

Seminars and Events

Service-level management.

Start the year with industry visionaries who show you how to use service-level management to increase IT's value to the business, achieve better utilization of resources, minimize costs and increase user satisfaction. Register today for this free seminar, "Service Level Management: Deliver on Your Network Guarantees."
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News Bits

TheGoodTheBadTheUgly

DAN VASCONCELLOS

WorldCom cattle call. WorldCom last week announced it is selling Douglas Lake Ranch, which is Canada's largest working cattle ranch and was once a pet property of deposed telecom titan Bernie Ebbers. No price was listed . . . and you know what they say . . . about having to ask.

Look Ma, no hands. Drivers are more accident-prone when using cellular phones — even when using hands-free models, according to new research from the University of Utah. The study showed that drivers using cell phones suffer from "inattention blindness," that is, an impaired ability to process visual information. ➤

Our heroes. What's worse than getting slammed by the MS-SQL Slammer worm? Getting slammed in the following days by companies boasting "If only you had used our . . ." One company's CTO promised to explain "how easily organizations may have avoided fallout" from the worm, while another boasted of customers whose networks were "barely disrupted."

Routers down, switches up, report predicts

■ The router market will remain depressed, while Ethernet switch sales are expected to be up over last year, according to Dell'Oro Group. Dell'Oro says worldwide router sales will decline 2% from 2002, reaching $6.2 billion this year — the third year in a row the market will shrink. Expected carrier spending cutbacks of 5% to 10% on wireline equipment is the cause for the slide, Dell'Oro says. Growth in the market is expected over the long run, as router sales are expected to reach $7.9 billion by 2007. Meanwhile, worldwide Ethernet LAN switch sales will grow 3% this year to $11.7 billion. The firm says network expansions at small and midsize businesses will spur growth over the next several years, with the market reaching $16 billion by 2007.

Document shows WorldCom hurting

■ Bankruptcy, scandal and management shifts at the highest levels do affect a company's bottom line. While most watching WorldCom over the past year did not expect the carrier to win a ton of new business, no one really knew what WorldCom was banking. Last week an internal sales report became public (www.nwfusion.com, DocFinder: 4135). The document details sales for the carrier from January to December 2002 for certain market segments only. According to the document, the carrier reported corporate account sales of $7.3 million in January 2002. By December that figure dropped to $3.5 million. The document also detailed the company's global account sales. In January 2002 sales totaled $11 million. By December global account sales dropped to $6.1 million. Corporate markets include data services for large business users. Global markets include data services for multinational users only.

DoS attack hits Web broadcaster

■ Internet Broadcasting Systems, the Minnesota company that broadcasts content on the Web on behalf of more than 60 television stations, last week suffered a massive denial-of-service attack on its Web site a few hours before President Bush's state of the union address. The attack crippled the site until ISPs, including UUNET, could filter out the incoming attack packets, a process that took about two hours. According to IBS President Reid Johnson, the company is working with technical advisers to prevent future DoS attacks.

COMPENDIUM

Grid overload?

Phil Wainright, who covers technology in a daily Weblog, worries if IBM's going to do to grid computing what Microsoft did to .Net — apply the title to so many things that it becomes meaningless.

Read more at www.nwfusion.com, DocFinder: 4151.

Symantec acknowledges security lapse

■ Symantec last week had to correct a flaw in its Web site where information about possible business deals with outside firms was exposed to Web visitors through a portion of the Symantec site called "submit a deal." This part of the Web site lets companies wanting to enter into business deals with Symantec file their suggestions via an electronic form, but because of Symantec's failure to ensure proper password authentication, among other things, the information was left exposed. According to Symantec spokesman Chris Paden, the security lapse lasted about three days after Symantec had made changes to the site. NGS Software discovered the problem.

EU, Microsoft pact lacks substance

■ The agreement last week between European data protection officials and Microsoft to alter the .Net Passport service and better protect personal data is more show than substance, according to privacy experts and analysts familiar with the terms of the agreement. "This is a case of Microsoft's self-interest and the European Union's interest in protecting its citizens being happily aligned," said Dwight Davis, vice president of Summit Strategies. Despite blustery statements from European officials about wringing "substantial changes" to .Net Passport out of Microsoft, the modifications agreed to are "tweaks," Davis said. Those changes include giving users finer control of what information they share with Passport, a summary of key information about privacy policies within the EU, a link to the European Commission's site on data protection laws and a tool for creating secure passwords. Users will be able to take advantage of the features through the addition of a prompt that will ask them to designate themselves as European Union residents.

OASIS issues e-commerce standard

■ The industrywide consortium Organization for the Advancement of Structured Information Standards last week said it has released the first draft of a royalty-free data representation standard for e-commerce. The draft, prepared by OASIS' Universal Business Language Technical Committee, contains specifications for XML representations of seven key business documents: order, order response, simple order response, order cancellation, despatch advice, receipt advice and invoice. The UBL specifications will be widely applicable in general business; in the accounting, customs, taxation and shipping industries; and anywhere that supply-chain management is involved.

Speed and Security—On the Go!

"We have been able to reduce our credit card authorizations to an average of five second or less," says Marty Maglio, director of IT Architecture for Wawa Food Markets—a convenience store chain with more than 550 locations throughout the mid-Atlantic region. "This has improved our customer service while cutting our communication costs in half!"

The Bottom Line: New WAN solution improves customer service, saves money

Find out more at **enterasys.com/nw/wawa1.**

THE ENTERASYS EDGE™

News and Information from Enterasys Networks Vol.1, No.2

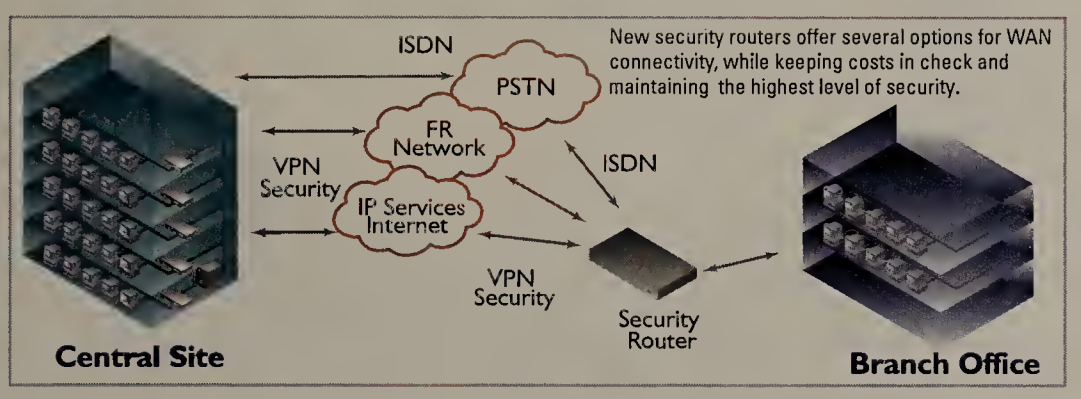
High-Performance, "Security Tough" Branch Routers

If you've been fortunate enough to vacation on a tropical island, you know the pleasure of getting away from it all. Unfortunately, if you own an island home, you also know the stress of maintaining this corner of paradise. It's impractical to fly back and forth every weekend to check on your property, so you're consumed by thoughts of burglary, fire, flood. Interestingly, these problems are similar to those faced by a CIO struggling to manage remote office networks.

Like a beach-front cottage, your branch offices may become inaccessible due to natural or man-made disasters. IT systems may become compromised by malicious hacker attacks, disgruntled employees or Internet-born viruses. WAN links may fail, or a local utility may dig up their lines and inadvertently cut through your T-1 cable.

To compound the problem, nobody at the branch office can tell the difference between Ethernet and Inkjet—so if something does go wrong they are not likely to diagnose a Denial of Service attack or router configuration error.

There are steps you can take to protect the remote office network. The most obvious and the most often overlooked is disaster assessment. Determine the nature and extent of risks, and develop contingencies to address these risks. Other good housekeeping tasks include always having Service Level Agreements for your WAN connections, using distributed firewalling, deploying VPN backup services and setting up automated offsite data backup.



New security routers offer several options for WAN connectivity, while keeping costs in check and maintaining the highest level of security.

Security Routers to the Rescue

To help you meet the challenge, there are new security routers. These devices provide connectivity over a wide range of WAN circuits—including Frame Relay, T-1 and xDSL—as well as cost-effective and rapidly deployed VPN tunnels. A security router also includes firewalling to protect remote office networks from attack, and Intrusion Detection capabilities so you know when an attack has taken place. And unlike the prior generation of routers that simply added security features on top of an enormous router code base, today's security routers are built "security tough" from the ground up.

Start with a Plan

Of course the convergence of security and networking at branch offices requires more than just plugging in a new device. You must have a defined network security policy.

Security systems, applications and services are the common constituents of just about every security strategy. But how does it all come together? For more information, go to **enterasys.com/nw/branch1.**

Enterasys Branch Router: 7 Times the Throughput of Cisco

The Tolly Group recently measured the performance of the Enterasys XSR-1805 and XSR-1850 security routers, and compared the results to the performance of **Cisco Systems 1700 series and 2600 series** branch office routers in identical configurations. Measuring routing, VPN throughput, Access Control List (ACL) capabilities and Quality of Service (QoS), the **XSR routers outperformed their Cisco equivalents in every category.**

Important highlights included:

- **VPN Throughput**—XSR-1805 forwards seven times more zero-loss throughput than the Cisco 2651XM in an IPSec tunnel configuration at 100 Mbps with 1,420-byte packets
- **Layer 3 Throughput**—XSR-1850 processes three times the zero-loss Layer 3 throughput of the Cisco 2651XM at 100 Mbps for 512-byte packets and larger
- **100 Mbps with QoS**—XSR-1850 provides more than triple the throughput of the Cisco 2651XM when forwarding 1,518-byte packets at 100 Mbps with QoS enabled

The results of the study led Kevin Tolly, president of The Tolly Group to conclude, "Typically, we see vendors test performance with ancillary functions like ACL and QoS processing turned off, but Enterasys tested its routers with full-device functionality enabled, meaning users get a truer picture of overall device performance."

Full details and test results are available at **http://www.enterasys.com/performance or http://www.tolly.com.**

Why high throughput when connecting across WAN links at speeds of only a few megabits? This is analogous to why we buy cars with top-rated speeds of 160 MPH, when the speed limit in most places is 65 MPH. A high-performance security router needs the horsepower to easily handle the demands of real-world network configurations—configurations with VPN, ACLs and QoS enabled—to protect your corporate intelligence and optimize your resources.

For example, when every remote employee decides to live stream the CEO's quarter-end earnings broadcast, you know that the XSR router is up to the task. Without a high-performance security router, all bets are off.

Enterasys' XSR security routers were explicitly designed to deliver best-in-class price performance. For more information go to **enterasys.com/nw/tolly1.**

Sun to roll out first blade server

■ BY DENI CONNOR

MOUNTAIN VIEW, CALIF.— Sun next week is expected to introduce the company's first blade-based server, as well as two midrange storage arrays, a 12-processor server and enhancements to its high-end servers.

While Sun would not comment on the announcements, sources say they will include:

- The first UltraSPARC-based server blade platform, which will let customers deploy ultra-thin machines in space-constrained environments where multiple servers run the same applications.
- The StorEdge 3510 Fibre Channel Storage Array, which lets customers deploy midrange modular storage as their capacity needs grow.
- Network-attached storage (NAS) capability for the StorEdge 3310, a SCSI-based disk array Sun unveiled in the fall.
- The Sun Fire v1280 entry-level server, which customers can use in workgroups or departments running ERP, CRM or database applications.

Sun's in blade running

Sun's new Blade 16000s are the first blades built using a RISC-based processor.

Vendor	Product	Processor/No. of processors	No. of blades per chassis
Dell	PowerEdge 1655	Pentium III/2	6
Egenera	BladeFrame Pblade	Xeon/2 or 4	24
HP	BL e-Class	Pentium III/1	20
HP	BL p-Class	Pentium III/2 or 4	8
IBM	BladeCenter	Xeon/2	14
RLX	ServerBlade 1200i	Pentium III-M/1	12
RLX	ServerBlade 800i	Pentium III low volt/1	24
Sun	Sun Blade 16000	UltraSparc III/1	12

Few details are known about the Sun Blade 16000s, uniprocessor server blades the company is expected to announce. The 16000s use UltraSPARC III processors and fit 16 blades in a rack-mount enclosure. They are designed for ISPs, application service providers, carriers and enterprises to use where space is expensive, cabling needs to be simplified and servers must be repurposed on-the-fly.

The Sun Blade 16000s will run Solaris and are expected to have Gigabit Ethernet connections to the network and NAS devices. Future versions will support InfiniBand, sources say.

The new Fibre Channel array will support up to 12 146G-byte drives operating at 10,000 RPMs for a total capacity of as much as 1.7 terabytes, sources say. The Sun StorEdge 3510 Fibre Channel Array will complement Sun's SCSI-based StorEdge 3310, which has been enhanced to offer NAS capability and support for AIX and HP-UX. The StorEdge 3510 will support the same operating systems as the 3310: Windows NT/2000, Solaris, Linux, HP-UX and AIX.

Customers say they welcome the additional capabilities of Sun's StorEdge 3300 storage systems.

"I'm very happy to see Sun expand its entry- and midlevel storage options," says John Groenveld, associate research engineer at The Pennsylvania State University in State College. "I'll be looking at the StorEdge 3000 line as external storage for database servers as well as for my department's software developers' source code repository."

The Sun Fire v1280, which has two to 12 UltraSPARC III processors running at 900 MHz, is the largest of Sun's line of v Series servers. It features some of the same capabilities as Sun's higher-end systems — dynamic partitioning and reconfiguration of systems resources — technologies that let IT managers run multiple applications on a server in protected partitions and automatically balance the memory, bandwidth and number of processors to accommodate tasks.

Sun: www.sun.com

Plethora of convergence wares on tap

■ BY PHIL HOCHMUTH

Convergence products announced last week from Cisco, AltiGen and Avaya could help customers more effectively link voice and e-mail applications, increasing user productivity and easing administration tasks.

The software and hardware products are aimed at small and midsize businesses — up to 1,000 employees — which typically have smaller IT staffs. Besides desktop productivity, vendors say converged IP telephony applications such as unified messaging can offer administration improvements by letting fewer staff support more applications.

Cisco added unified messaging to its Integrated Communication System (ICS) 7750, a combination IP PBX, unified messaging and application server for companies with 50 to 1,000 employees. The box now supports Cisco's Unity Unified Messaging 4.0 software, which can combine Cisco voice mail with messaging products such as Microsoft Outlook and IBM Lotus Domino into a single back-end system and end-user interface. The software lets users receive voice mail and e-mails through a groupware client interface, where voice messages can be sorted, forwarded through e-mail and listened to on a PC or IP phone.

The West Virginia University Foundation, an independent fund-raising group for the university, installed the ICS 7750 in its Morgantown office more than a year ago. Support for Cisco Unity on the ICS 7750 "is something we've been waiting for," says Mike Phillips, director of technical services for the 60-person office. "The ability to add [unified messaging] was one of the reasons we installed an IP phone system in the first place."

The organization could see productivity gains from its employees by combining access to voice mail and e-mail through a single Outlook interface, Phillips says.

Cisco's ICS 7750 starts at $15,000. Cisco Unity 4.0 costs $135 per user. Outlook is sold separately.

AltiGen announced its AltiServ1 IP and AltiServ2 IP telephony boxes, which are aimed at offices with eight to 600 users. The AltiServ products are server-based on an Intel/Windows 2000 Server with an IP switching architecture, while the previous AltiGen AltiServ boxes were a hybrid of IP and TDM architectures. Call processing is done on PCI cards in the servers, which run AltiGen's AltiOS embedded call control software. This allows for faster call processing and for survivability of phone service in the event of a server outage, the company says.

The AltiServ boxes support up to eight T-1/E-1 trunks for public switched telephone network or WAN service connectivity. The IP PBXs are based on the H.323 protocol, and work with AltiGen's Alti-IP 600 IP phones and H.323-based phones from Polycom and Siemens. Contact center software that integrates with Outlook and Goldmine CRM software also is included.

The AltiServ 1 and AltiServ 2 IP PBXs will be available on Feb. 15 at a per-seat cost of $200 to $500 (not including phones).

Also announced last week was an IP PBX for midsize and large businesses from industry newcomer Zultys (see story, page 17).

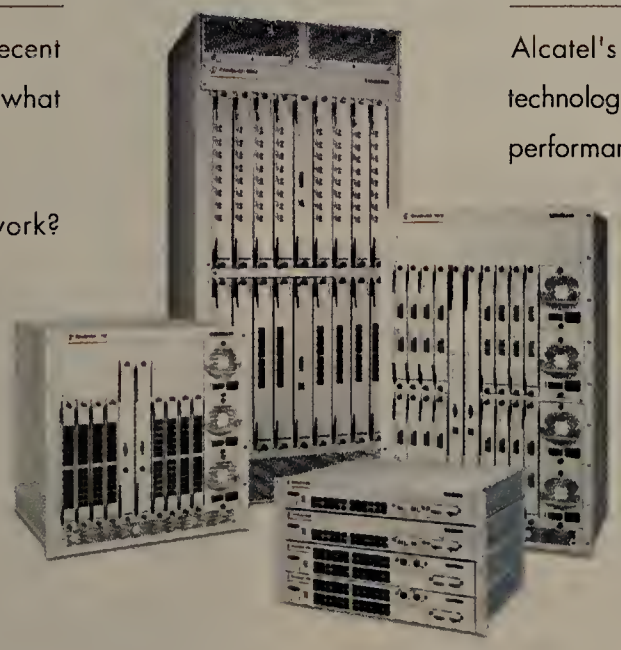
On the convergence application front, Avaya announced that its Unified Messenger product now integrates with IBM Lotus Domino and Outlook messaging platforms, which will let users access voice mail, e-mail and faxes from a single interface. The software also lets users retrieve voice and e-mail messages over any phone connection, with a text-to-speech function that can "read" e-mails over the phone. Unified Messenger can interoperate with Avaya's Definity line of PBX phone switches, its Eclips IP PBX products, along with Avaya Octel and Audix voice mail systems. The software costs $400 to $600 per user. ■

Building carrier class enterprise networks

Availability in enterprise networks has improved in recent years – but it's come at a price, and still doesn't approach what you expect from carrier networks.

Is your data network less important than your voice network? In many cases, it's even more critical.

Building a carrier class enterprise network means continuous network operation from the **edge to the core**, so that network failures have zero impact to the end user and mission-critical applications are always accessible.



Alcatel redefines **availability** for the **enterprise**

Alcatel's next-generation enterprise products have integrated technologies that **ensure carrier class availability** and high performance to the enterprise, **without a cost premium**.

Alcatel has a history of innovation and proven leadership, and has been building carrier networks around the world for over half a century.

Carrier class is a distinction you have to earn. We've earned it and now deliver it to your enterprise with the **next generation OmniSwitch family**.

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Sprint shake-up might be in the works

■ BY DENISE PAPPALARDO

Esrey's legacy

William Esrey, chairman and CEO at Sprint, has overseen the carrier through many changes.

Speculation last week that longtime Sprint Chairman and CEO William Esrey is about to step down had industry watchers looking back at his career while raising concerns about the company's future.

"This is not the best time for Sprint to be dealing with a management shift," says Lisa Pierce, an analyst at Giga Information Group. "This is a time when Sprint could be playing up stability at the executive level, which is a unique position [compared with other carriers]."

Sprint declined to comment but is expected by industry watchers to announce Esrey's plans along with its 2002 year-end financial results Wednesday. Esrey, 63, was diagnosed with cancer of the lymphatic system in November.

Analysts have low expectations for Wednesday's financial news given Sprint's painfully slow revenue growth in recent quarters (it only crept up from $6.6 billion in the third quarter of 2001 to $6.8 billion in the third quarter last year) and generally poor results across the telecom industry. Sprint, like other carriers, has been hard hit by eroding margins in consumer voice and stagnant business service growth. Recently, Verizon surpassed Sprint as the nation's No. 3 long-haul carrier.

Although Esrey might not be leaving Sprint at the best of times, observers say the company and industry owe him much.

"He has every right to be proud of his and his team's accomplishments over the past 18 years," Pierce says.

Esrey was elected the company's CEO in 1985, one year before Sprint — then called United Telecommunications — launched its first long-distance service. Previously, the carrier largely provided local service in rural areas.

Today, Sprint offers local, long-distance and international services. Its digital wireless network, which spans 4,000 cities and supports 16.7 million subscribers, is among the industry's largest.

Among Sprint's boldest moves was its attempt to merge with WorldCom in 1999, a deal that regulators shot down because of competitive concerns. Since then, Sprint's name has surfaced in connection with many merger rumors, including with assorted regional Bell operating companies, most often BellSouth.

"It was clear that Sprint was really trying to push that deal through. When it fell apart it was a real slap in the face," says Johna Till Johnson, president and chief researcher at Nemertes Research and a *Network World* columnist.

In hindsight, Sprint dodged a bullet.

"[Sprint has] always had its values in the right place," Johnson says.

Esrey has been outspoken about the damage WorldCom has done to the telecom industry.

"At Sprint, we kept asking ourselves what we were doing wrong because we couldn't generate the numbers WorldCom claimed," Esrey said in a speech in October.

"To compete, other carriers were forced to drop prices to nearly unsustainable levels. As we've discovered, the margins were a work of fiction, but the destructive effect on our industry was very real," he added.

Esrey's right-hand man, COO Ronald LeMay, is also said to be leaving Sprint, possibly opening the door for BellSouth executive Gary Forsee to take over. ■

Start-up scouts for redundant data

■ BY DENI CONNOR

AUSTIN, TEXAS — Deepfile CEO Jeff Erramouspe says that half the files on a typical corporate network are unaccounted for, either because they are redundant or haven't been accessed for a long time. Not only does this waste storage capacity, but it's a difficult environment to manage and can leave a company exposed to security risks, he says.

Deepfile's answer to the problem will come in the form of two appliances designed to help companies search for redundant or unused files and take action on them. The company expects to have both products, which will work with Windows NT/2000 file servers and network-attached storage devices, available as soon as April.

The first product, Auditor, grazes a file system, pulls back metadata on every file and saves it to a database on the appliance. Each file is given a unique signature — a checksum, per se — that lets the appliance compare files for sameness even if they have different names and locations. It then reports the files, their locations and characteristics to the second product, Enforcer.

Based on rules the IT manager sets, Enforcer will cull duplicate files and directories and migrate older, still-useful files to less-expensive storage or tape.

"From a business point-of-view, I was interested in knowing how our storage was being allocated between high-cost storage, medium-cost storage and our least-expensive, direct-attached storage," says David Graham, director of IT operations for Web-based content management vendor Vignette. "I wanted to make sure Vignette was using our storage resources to the highest and best use."

Graham has installed a Network Appliance filer that has about eight terabytes of data and uses early units from Deepfile to monitor it.

"[Deepfile's appliance] scans a very large file system in our case and provides detailed statistics about the makeup of that data," says Darren Johnson, senior IT administrator for Vignette. "We knew we were filling up the file server but didn't know what exactly made up the data. . . . With Deepfile, we found that as much as hundreds of gigabytes of data is duplicated."

The products are implemented as 1U-high servers, which connect to the network via a 10/100/1000M bit/sec Ethernet port.

Jamie Gruener, a senior analyst with The Yankee Group, says Deepfile has elegantly combined technologies often found in separate products.

"They combine policy-based management with data management — it's very simply 'Capacity Planning and Management 101' for file-oriented data," he says.

Deepfile is similar to another young company called Arkivio in that it collects metadata in the same fashion, Gruener says. Deepfile differs in that it handles both Windows Common Information File System and Unix Network File System data and provides more data management capabilities.

Deepfile Auditor and Enforcer have Web-based interfaces for local or remote management. Auditor is available now starting at $10,000 for the initial two terabytes of data managed per year. Enforcer will be available in the second quarter starting at $20,000. ■

PROFILE: DEEPFILE

Location:	Austin, Texas
Founded:	November 2000
Founders:	Jeff Erramouspe, president and CEO, formerly with Vignette; Jeff Bone, CTO, formerly with Activerse, Sun and Dell
Products:	Deepfile Auditor and Enforcer file management appliances
Funding:	$1 million from Techxas Ventures and angel investors
Employees:	8
Fast fact:	The company got off to an inauspicious start when it temporarily lost its domain name to a scavenger through a Network Solutions billing error.

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Lotus

continued from page 1

collaborative components and development tools that integrate Domino with WebSphere and DB2.

"Code talks," said new Lotus general manager Ambuj Goyal, whom IBM software chief Steve Mills sent to craft Domino into a set of collaborative components for IBM's On-Demand computing. Goyal, who built IBM's back-end WebSphere Business Integration business, says he plans to build front-end services using Domino. "The more code we ship the more people will believe that we are doing this," he says.

The strength of the Lotus stand at Lotusphere highlighted IBM's commitment to evolve its Next-Generation Domino platform and Java 2 Platform Enterprise Edition development environment.

"The evolution of Domino is happening more rapidly than I thought," said Andrew Krause, a collaboration specialist with a federal government agency. "But they also have a strong interest in not alienating Domino customers."

Sources say Lotus plans 15- to 18-month release cycles that will include a maintenance update and a version that introduces new features.

Road to the future

In the next 18 months, Lotus plans to roll out a variety of products that will more tightly integrate Domino with DB2 and WebSphere.

Planned ship date	Product	Description
April 1, 2003	WebSphere Portal 4.2 Extend	Vehicle for integrating Domino components into WebSphere.
	Lotus Learning Management System	First Lotus-branded product that runs on WebSphere/DB2; includes reference model client for Next Generation platform.
July 1, 2003	Lotus Domino ToolKit for WebSphere Studio	Helps transition Domino developers to J2EE, JSP world.
	WebSphere Portal Extend w/Collaboration Center	Conferencing, teamware, search technology.
	Next Gen Mail	First collaboration component; provides message routing agent for component-based model.
Dec. 31, 2003	Notes/Domino 6.5	Provides alternative client support.
	WebSphere Portal 5 Extend	Next version of component portal.
	Rapid Applications Development tools for J2EE	Domino Designer features in WebSphere Studio further aid in developer transition to J2EE.
	Next Generation Collaborative Capabilities	More components including calendaring, instant messaging.
2004	Domino 7.0	Option to run DB2 as data store; Web services begin to replace Java APIs.

But Krause said the reality of two Domino versions, the traditional monolithic model and the set of components that run on WebSphere, means choices eventually will have to be made. "We are a WebSphere customer also, and we are already trying to rationalize two [collaboration] environments. Management will always ask us why we have both."

Just a year removed from the conceptual models presented at Lotusphere 2002, where the company showed up without having shipped a major product for three years, Lotus demonstrated products and tools that will become the foundation for Next-Generation Domino. The Next-Generation platform is a set of collaborative components such as mail and calendaring that can be embedded in applications and run on WebSphere.

"IBM has executed well over the past 12 months," says Matt Cain, an analyst with Meta Group, on the high-stakes Domino-to-WebSphere transition. "The question is, how many of the 60 million Domino users will drop out?"

While that answer will play out over many years, Cain says Lotus last week reaffirmed that Microsoft's collaboration strategy remains disjointed as the two rivals work to create sets of collaborative components and jostle for supremacy in the Web services world.

"I'm interested in the openness of the platform IBM is building," says Frank Hughes, a Notes administrator for a large power company. "I can leverage my existing [Domino] infrastructure into Next Generation. I don't want to get into Microsoft. I don't think they have a coherent collaboration strategy."

Lotus is trying to emphasize that point.

The company says it will deliver in the first half of this year the initial collaboration component called Next Gen Mail, an e-mail-only server that runs on WebSphere.

IBM says it hopes Next Gen Mail will help users familiarize themselves with components and the value of the component architecture, where Next Gen Mail can be embedded in applications such as workflow to provide a mail-routing function.

The component, which can deliver mail to low-end users, also might make IBM/Lotus enticing to Microsoft Exchange 5.5 customers who might not want to upgrade to Exchange 2000 and Active Directory. Those users must make migrations this year as support ends for Exchange 5.5.

Microsoft does not have a counter for Next Gen Mail, which provides users the option of rolling out low-cost, mail-only seats to workers who haven't traditionally had e-mail, such as shop floor workers. The catch, however, is that companies would have to deploy WebSphere.

Microsoft for now cannot provide comprehensive e-mail deployment and pricing options that cover everyone from power users to occasional users.

Lotus plans to price Next Gen Mail at $25 per seat, according to Lotus sources, about half the cost of a Domino seat. Microsoft's list price for Exchange is $67.

Lotus also previewed the next major release of Domino, slated for 2004, that has an option to use DB2 as its back-end store. Like Next Gen Mail, it begins to give users a taste of Domino's Next-Generation platform. Support for DB2 also includes Domino's replication technology, which works between the Notes client and DB2 to let users synchronize data.

The database is important because it provides scalability and combines data in one source, allowing developers new ways to use that data in applications.

Microsoft is working on a similar database back end for an Exchange release called Kodiak that will use Microsoft's forthcoming Yukon database technology as its data store. However, the Kodiak release isn't slated until sometime in 2005 at the earliest. In the meantime, Microsoft will ship in June a release called Exchange Server 2003, which has lower cost-of-ownership features similar to those in Domino 6, which Lotus released last October.

Microsoft's collaboration story also has been clouded by its move to pull collaborative features from Exchange and make them part of a module called Greenwich that plugs into the base operating system and provides instant messaging and conferencing. And Microsoft's announcement two weeks ago that it intends to acquire conferencing vendor PlaceWare has led many experts to question if Microsoft is shifting gears again.

Like Microsoft, Lotus must develop Web services interfaces to its collaborative components to replace APIs that make integration more complex. Also, only one-third of the Domino install base also has WebSphere, according to company officials, so Lotus must nudge two-thirds of its install base toward WebSphere without alienating them.

"The way things are formulated I can try things and see if they work," says Jean Thibodeau, vice president of IS for Canam Manac Group, a Canadian steel manufacturer. "But hopefully I don't have to decide between Notes/Domino and WebSphere. They are complementary."

IBM has said its software strategy revolves around WebSphere and while Domino represents a revenue stream in the near term it could become a support burden in the future.

"The Domino base is a huge base, and that base needs to continue to build," IBM's Goyal said. "But it is not going to get me a billion users because it is not componentized." ■

NetPro extends Active Directory management suite

■ BY JOHN FONTANA

SCOTTSDALE, ARIZ. — NetPro has announced a new module for its management and monitoring suite designed to plug a lingering corporate security concern in Microsoft's Active Directory technology.

The company last week shipped DirectoryLockdown, which is built to block directory attacks that disgruntled administrators could launch from inside a company. NetPro also released a module called DNSAnalyzer, which monitors DNS in the directory, ensures its health and boosts security.

Both modules are being added to the company's Active Directory Lifecycle Suite, a collection of six management and monitoring tools. The DirectoryLockdown module is part of a new version of the software bundle now called Secure Active Directory Lifecycle Suite.

The Lockdown tool is NetPro's answer to a problem that Microsoft publicized more than a year ago. The issue is that domains within a single directory deployment, called a forest, can not be considered their own secure entity. That means domains can't trust each other because anyone with physical access to machines that run Active Directory could take over the machine, inject malicious code and compromise

See NetPro, page 57

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ComNet

continued from page 1

make sure it doesn't spread to pneumonia."

Web services debate

The security theme that Mehan emphasized was also evident also at *Network World's* Web Services Showdown, which pitted representatives from BEA Systems, IBM, Microsoft and Oracle in a debate about the promises and reality of Web services. John Gallant, *Network World* president and editorial director, and Tony Picardi, senior vice president of software research at IDC, fired questions at vendor participants.

Security must be inherent in any Web services architecture, said Bob Sutor, IBM's director of Web services.

"Businesses want to use [Web services] to connect to the Internet and to partners," he said. "You want transactions with security and [to] not throw out [the infrastructure] you have."

Microsoft's Neil Charney, director of platform strategy, said that while customers can secure Web services today using technology such as Secure Sockets Layer, deeper security needs to be built into Microsoft products. "You will see security in all our products," he said.

Key to Web services are tools that let businesses make their applications accessible via the Web, says Oracle's Ted Farrell, architect and director of strategy for applications tools. "You won't see Oracle out writing a database or tool for specific applications. We want to wrap the [application] layer with Web services and offer any application as a Web service," he said.

Agreement on standards for Web services is essential to success, the panelists said. Once the technology is solidified, it should rightly assume an unglamorous role, said Adam Bosworth, BEA's senior vice president and chief architect for advanced development. "It's going to be part of the core plumbing," said Bosworth, who created a minor stir when he said that this summer his company plans to release an ambitious new version of its WebLogic Workshop development tool for Java environments.

More with less

A theme running throughout the show was the need to do more with less to run enterprise networks.

The FAA's Mehan lamented not being able to buy all the intrusion-detection, VPN and antivirus software he might want, and instead having to buy a mix of what he could afford.

Conference sessions with titles such as "Doing More with Less" and "Closing the Deal on Peak Infrastructure Performance" attracted substantial crowds and initiated much discussion.

"The days are gone when you could buy a tool and let it sit on the shelf collecting dust," said Michael Kennedy, a managing partner with Network Strategy Partners. "Technology needs to get integrated into the business so that it will support [delivery of] end-to-end services."

On one panel, representatives from vendors Packeteer, RouteScience Technologies and Peribit Networks attempted to explain how their products could help companies support new applications without greatly increasing bandwidth outlays.

"With new traffic such as [voice-over-IP (VoIP)] and streaming media, simply getting a bigger pipe doesn't solve the problem anymore," said Todd Krautkremer, vice president of worldwide marketing at Packeteer. He said he favors traffic management and quality-of-service (QoS) metrics that would prioritize applications such as order-entry programs over, say, music file-sharing programs.

One audience member asked the panel how spending money on their software — which can cost from $5,000 and $50,000, depending on network configuration — is less expensive that doling out cash for increasingly less-expensive bandwidth.

"Bandwidth can still be cheaper in some cases, but it doesn't take into account the performance of various applications," Krautkremer said. "Sometimes more bandwidth isn't enough to support certain applications."

Among other companies aiming to help customers better support new applications was Viola Networks, which launched software called NetAlly designed to gauge a network's ability to handle VoIP traffic.

The server and agent software simulates VoIP traffic on customer networks before IP telephony gear is installed, letting network executives determine how extensive a network upgrade might be necessary to support VoIP. The software checks for packet loss, latency and jitter on the links that would carry voice.

Viola's one-time network evaluation service costs $500. The software costs about $50,000, depending on the number of sites in the network and the number of tests supported.

Separately, Opnet announced a network traffic-analysis tool, dubbed IT Guru 9.1. The software lets network managers test the effect an application will have on a production network before rolling out the application.

The software can offer suggestions on how to design network infrastructure or rewrite application code to improve an application's performance on the live network.

Another vendor, Allot Communications, showed a new version of its NetEnforcer appliance that can enforce QoS standards. It also is designed to help limit the bandwidth that peer-to-peer applications can grab on network connections.

Called NetEnforcer 202, the appliance will replace the 201 model. New software on the box targets the Kazaa file-sharing application Kazaa 2.0, known for its bandwidth-hogging.

NetEnforcer 202 will cost $5,500 for a version with 2M bit/sec throughput and $7,500 for one with 10M bit/sec throughput.

Also at the show:

- *Network World* hosted an awards ceremony for winners of its 2002 User Excellence Award competition (see www.nwfusion.com,DocFinder:4153. In its 18th year, the program honors organizations that have adapted mainstream technologies creatively or have applied newer infrastructure technologies to solve pressing business problems.

Commercial insurance firm Royal & SunAlliance USA won top honors. The company crafted a money-saving self-service operating-system upgrade program that had 7,000 employees move from Windows 95 to XP while the IT team simultaneously rolled out Active Directory as the core of a new identity management system, switched to a new software distribution server and implemented self-service password management.

Representatives from runners-up, the U.S. Department of Veterans Affairs and Wells' Dairy, also were on hand to receive awards.

- Attorney Richard Wiley moderated his annual "town meeting" session, at which Washington telecom experts concluded that regulators would continue to have some control over telephone rates after the Federal Communications Commission finishes a review of telecom competition next month. The experts stopped short of making specific predictions, but agreed that the less regulation, the better.

The IDG News Service contributed to this story.

PHOTOS STAN BAROUH

ComNet action included Network World's Web Services Showdown (top, left to right) featuring BEA Systems' Adam Bosworth, IBM's Bob Sutor, Microsoft's Neil Charney and Oracle's Ted Farrell; attendees and exhibitors interacting on a uncrowded show floor (center); FAA CIO Daniel Mehan sharing thoughts on network security (bottom, right); and Network World's 2002 User Excellence Award winners, Chris Hee-ley and Roger Thibodeau, from insurance company Royal & SunAlliance (bottom, left).

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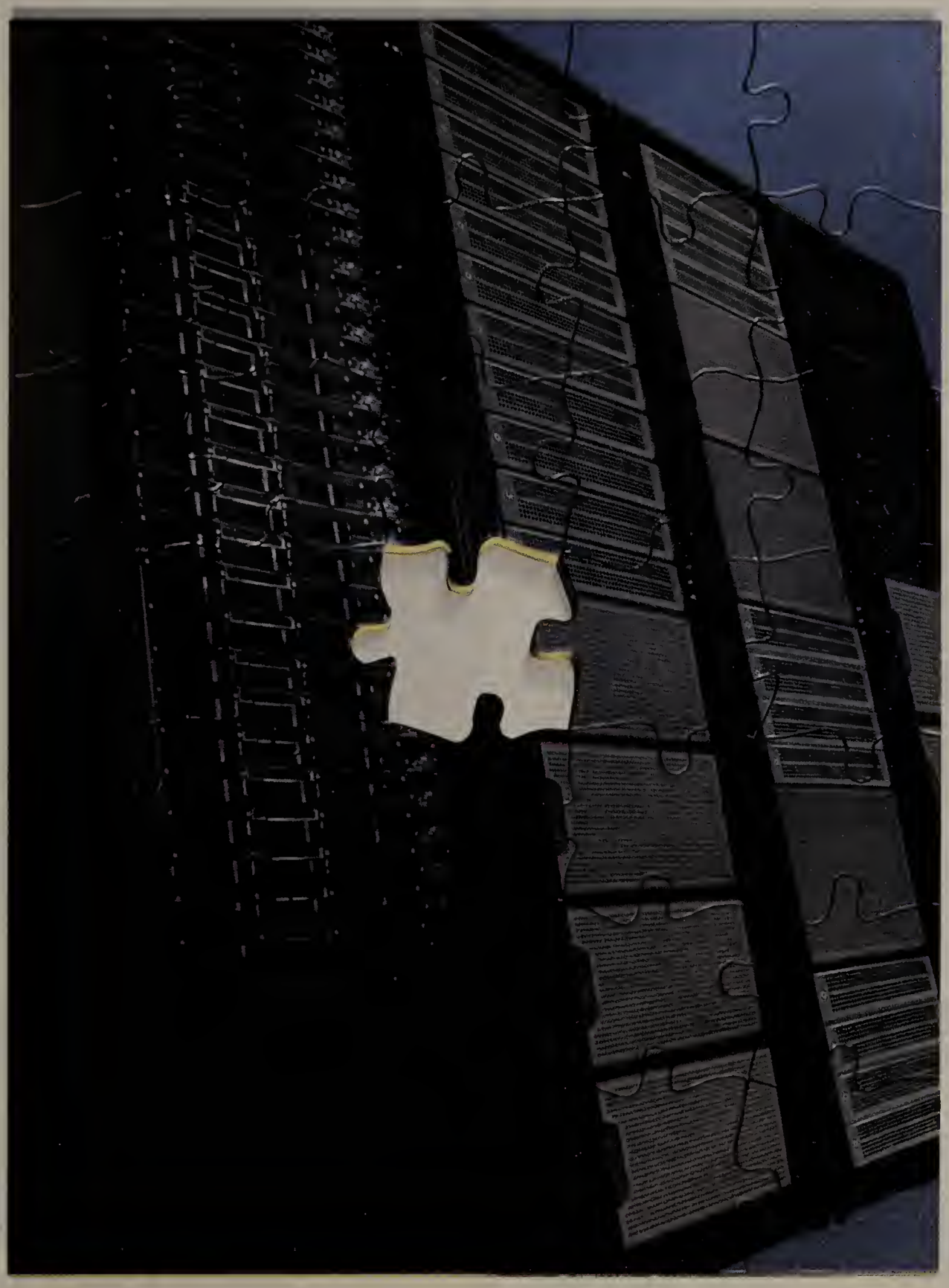

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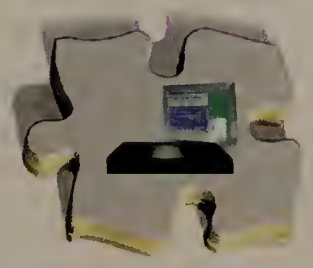

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Reporter's Notebook On diminishing returns, robots and the unknowing seen at ComNet.

PHOTOS: STAN BAROUH

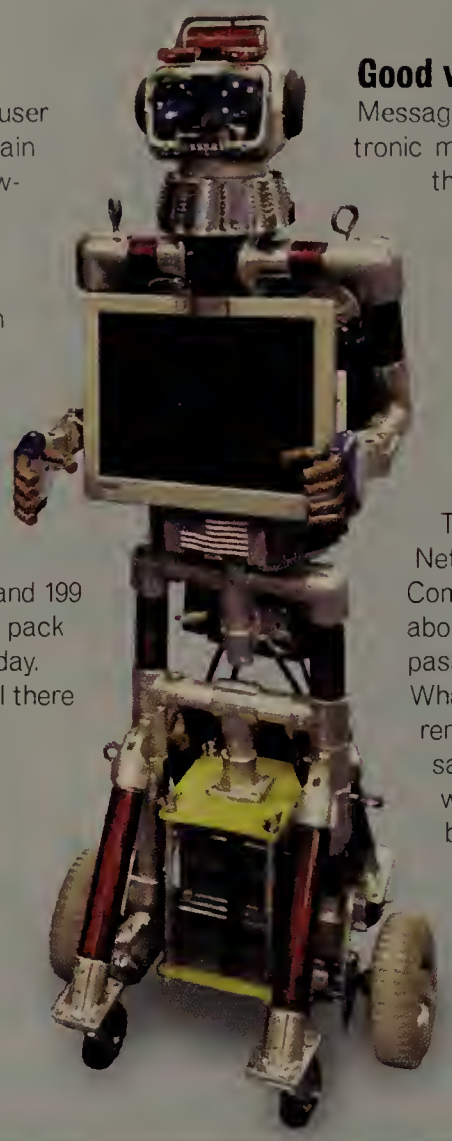
Attendance was way down at this year's ComNet.

On the decline

Dwindling vendor and user attendance was the main observation most showgoers had about last week's ComNet. The show that once overflowed the Washington Convention Center's 381,000 square feet now only uses about one-third of that space. Another sure sign of deteriorating vendor interest: The "Program, Buyers Guide and New Product Directory," which outlines sessions and vendor products, was 81 pages long this year vs. 169 in 2001 and 199 in 2000. One attendee said, "I was thinking vendors would pack up [Thursday] morning since it was so empty on Wednesday. Have you heard anything about ComNet next year . . . will there be one?" Good question.

Funny guys

Vendors participating in *Network World's* Web Services Showdown tossed a few barbs at each other. In one exchange, Microsoft representative Neil Charney asked IBM representative Bob Sutor how IBM managed to make so much money off a free technology — Linux. Sutor replied that the key was selling useful applications on top of the platform. "If you gave away Windows, you could see how it works," he said.



Good vibrations

Messaging devices, yes, but you don't expect to see electronic massaging devices at a network trade show. But there are a lot of surprises in life. There was a booth selling Rhythm 3000, a $500 device that the maker can treat an impressive list of ailments: diabetes, back tension, fibromyalgia, stress relief, fatigue, headaches, arthritis, sciatic nerve and tennis elbow. Wonder what it can do for SQL worms?

Call me Sprockit

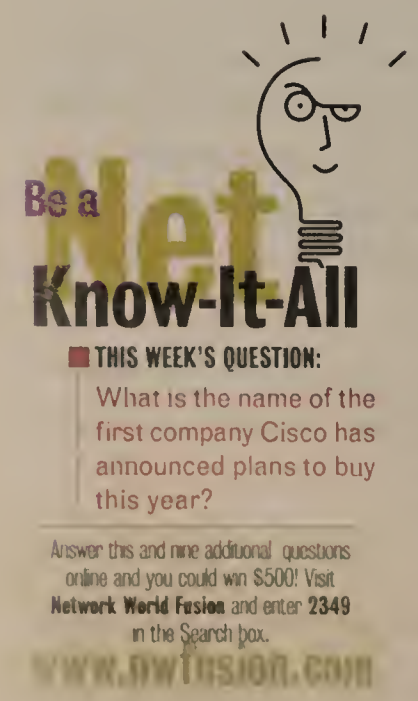
There are lots of pitchmen at trade shows, but NetScaler's Sprockit was the hands-down best at ComNet. Sprockit is a robot on wheels that stands about four-feet tall and chats up the crowd as it passes the booth. "Hello, my name is Sprockit. What's yours?" it asks in a flat, mechanical voice. It remembers your name and engages you in conversation about what you are doing at the show or whether you're visiting NetScaler's booth. The robot is remote-controlled and equipped with a microphone and video camera that feeds back to a human somewhere out of sight. Oddly, many people are afraid to talk to the machine and scurry away.

Sprockit, the 4-foot-tall remote-controlled pitchman for NetScaler, tried to drum up interest at ComNet. Many were intimidated by it.

ComNet attendees focus on wireless security

■ BY DENISE PAPPALARDO

Wireless networks were a hot topic of conversation at last week's ComNet Conference & Expo, which featured 10 sessions devoted to everything from wireless LAN security to 3G's viability.



On the wireless LAN side, sessions focused on the security flaws inherent in the 802.11b specification. The IEEE is drafting a new standard that will fix security holes that create vulnerabilities in 802.11b networks with 802.11i. But this specification is not expected to become final until later this year.

Industry experts in one session had some advice for users who have or want to deploy a wireless LAN: Take a "layered" approach to security. Discovery and vulnerability assessment, access-point security including media access control filtering, user authentication and encryption, security policy enforcement and intrusion detection must all be in place to secure a wireless network, says Fred Tanzella, CTO at intrusion-detection vendor AirDefense.

Tanzella said rogue access points or physical thefts are common risks.

"Your best employee could be your biggest security risk," he said.

An eager employee who installs a wireless router in his home to work more efficiently after-hours is opening an unprotected hole on the corporate network, he said.

And if a disgruntled employee or activist is targeting a company, physical theft of a laptop or PDA is just as possible as a random hacker trying to access your wireless LAN.

Industry experts agreed that all users should have the ad hoc network option turned off when setting up their wireless LAN cards. If left on, other wireless users could use the device as an access point. They also recommended that businesses that deploy a companywide wireless LAN use VPN security such as IP Security for encryption and authentication.

While one attendee found this session useful, she says she would have liked to have heard more about wireless LANs.

"I was looking for real-world solutions to assist with running my business better," says Mary Stadelbacher, president of computer consulting company Pionus Creations in Salisbury, Md. "I wanted to hear more about new implementations of 802.11, products, security, troubleshooting tips. Whatever would give me a good [return on investment] of my time and would benefit my clients the most."

Discovery and vulnerability assessment, access point security . . . security policy enforcement and intrusion detection all must be in place to secure a wireless network.

With the promise of much faster data rates, 3G has been hailed as a breakthrough for end users. But full 3G support still isn't available in most locations and carriers continue to pull in the reigns on 3G network rollouts. AT&T Wireless Services last month scaled back its 3G deployment plans.

The International Telecommunications Union says 3G services should support 144K bit/sec mobile rates, 384K bit/sec stationary mobile rates and up to 2M bit/sec fixed rates. But analysts at the show agreed these are ideal rates. One user will not see 144K bit/sec, but possibly up to 100K bit/sec.

While it's not clear if 3G will provide the wireless infrastructure to offer business and consumer users a data experience similar to their desktops, it is clear that the carriers already have invested too much in the technology to turn back now. ■

Infrastructure

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Short Takes

■ **Cubix** has launched a dual Xeon-based blade server with support for RAID 5, Windows 2003, SQL Server and Linux systems. The company's blade, the **BladeStation XP4,** which uses 2.8-GHz Xeon processors, supports as many as four 147G-byte hot-pluggable drives. It also supports as much as 8G bytes of RAM and has four PCI-X/PCI slots, dual 10/100M bit/sec Ethernet connections, a 10/100/1,000M bit/sec Ethernet adapter and an integrated keyboard-video-mouse switch. The BladeStation enclosure is 6U high and could contains three blades and redundant, hot-swappable power supplies. The BladeStation XP4 starts at $2,600 and is expected to ship in February.
www.cubix.com

■ Wireless LAN vendor **Proxim** last week cut prices by almost one-third for its Orinoco wireless LAN access points and introduced an access point using the 54M bit/sec IEEE 802.11g standard. The company lowered the price of its main enterprise access point, the **Orinoco AP-2000,** from $900 to $600. The AP-2000 is a two-slot access point that can hold 11M bit/sec 802.11b adapters and, by attaching a separate kit, 54M bit/sec 802.11a adapters. The AP-2500, designed as combination access point and gateway to be deployed quickly for public wireless hot spots, is now $800, down from $1,100.

The new **Proxim 11g Kit,** which will ship in the second quarter of 2003, is based on the draft IEEE standard known as 802.11g. This standard takes the same radio frequency as 802.11b, the 2.4-GHz band, but uses a different modulation scheme to boost the data rate to 54M bit/sec. The new product will let network managers boost 2.4-GHz throughput for a user if the user devices also are equipped with corresponding 802.11g adapters. The kit, which attaches to the AP-2000, is the first of several 802.11g products, according to Proxim. Suggested retail price is $150.
www.proxim.com

In Site: Lessons from Leading Users

School solves videoconferencing puzzle

■ BY TIM GREENE

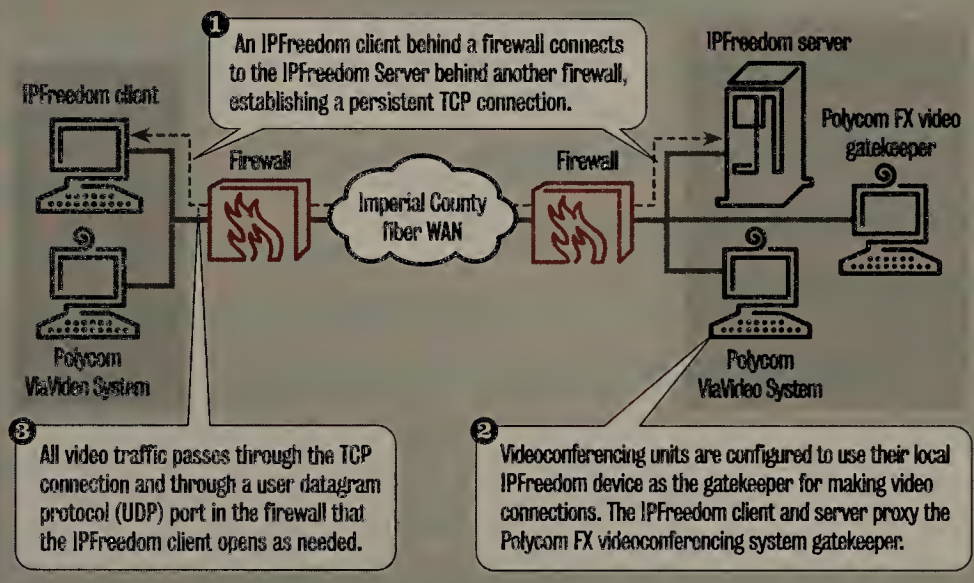
Five years ago, the Imperial County Office of Education in El Centro, Calif., had a vision to put videoconferencing into every classroom in its 56 schools, but it wasn't until last year that it solved a key problem: getting the video traffic to go through firewalls easily.

Now, with the installation of gear from Ridgeway Systems, traffic can pass through the firewalls that protect the independent networks at each of the 17 school districts within the county. This might prove to be the last major obstacle to video deployment, says Alan Phillips, the district's videoconferencing specialist.

"We were close to being dead with IP video," he says, because of unforeseen problems getting firewalls properly configured to allow incoming video calls. And, given the high cost of ISDN as an alternative, IP was the only economically feasible answer.

Getting video through firewalls

Imperial County, Calif., schools use Ridgeway IPFreedom gear to clear the way for video traffic as it crosses through firewalls across sites. This example shows the central school site and one other site.



One problem wasn't technical; it had to do with jurisdiction. Phillips was in charge of a countywide teleconferencing project to be run over an evolving Gigabit Ethernet fiber ring that the schools lease from the local water district. Each school district is connected

See School, page 20

Versatile IP PBX on tap from Zultys

■ BY PHIL HOCHMUTH

SUNNYVALE, CALIF. — Zultys Technologies last week made its debut with its MX1200 IP telephony server — or IP PBX — aimed at replacing circuit-switch phone networks in small and midsize businesses.

The MX1200 could be used to combine voice and data onto a single LAN/WAN infrastructure while integrating applications such as instant messaging, voice mail and e-mail on corporate desktops. The IP PBX is based on an embedded Linux operating system from Monta Vista Linux, and runs Session Initiation Protocol (SIP), an emerging voice-over-IP (VoIP) call control and application protocol technology.

Some industry observers consider SIP to be the successor to proprietary call control technologies, and previous VoIP standards such as H.323 and Media Gateway Control Protocol.

The MX1200 will compete against products such as 3Com's NBX; Alcatel's OmniPCX 4400; Avaya's IP600, S8700 and S8300 IP PBXs; Cisco's CallManager; Mitel's 3300 Integrated Communications Platform; Nortel's Business Communication Manager and CSE 1000; Shoreline Communications' ShoreGear converged voice switches; and Siemens' HiPath IP PBX.

The MX1200 could sit in a remote office and act as a multifunction device with PBX, routing and switching support. The box also could attach to a LAN backbone or data center at a corporate headquarters.

A single MX1200 supports 20 to 1,200 users, and four boxes can be networked together — locally or over a WAN — to support 4,800 users. The box has an integrated 28-port 10/100M bit/sec LAN switch (12 of which have 802.3af-based in-line AC power), eight T-1/E-1 ports and a single long-reach (1.2-mile range) 100Base-FX fiber Ethernet port. The device also comes with eight analog ports for connecting fax machines, analog teleconference equipment or simple phones. Two copper-based Gigabit Ethernet connections also are included for linking MX1200 devices to each other, or to a larger LAN switch. Up to 400 hours of voice mail can be stored on an integrated hard drive.

The MX1200 supports quality-of-service (QoS) protocols such as Layer 2 802.1p and 802.1Q priority, and virtual LAN tagging, and Layer 3 Differentiated Services functions. Prioritizing VoIP traffic with these QoS settings could help improve voice

See Zultys, page 20

Wants to write e-mails offline

Wants to view Web sites offline

Repetitive configuration problem

Managing mobility can be challenging.

That's why there's Windows XP and Office XP.

Recognize any of those issues? Or, perhaps, all of them? We thought so. Many of these issues can be related to your legacy desktop software. Fortunately, many of them can be addressed by features in Microsoft® Windows® XP Professional and Office XP Professional.

Want specific examples? Windows XP Professional offers new Remote Assistance, which enables you to view a user's screen and control the user's computer to solve technical problems from afar. Office XP Professional gives you installation support for HTTP, HTTPS, and FTP, which means you can install and maintain the suite directly from a Web server or a file share on your network. And finally, several new features make deployment easier than ever. For more ideas about managing your desktops, visit **microsoft.com/desktop**

TOLLY ON TECHNOLOGY

Kevin Tolly

SQL Slammer attack reveals reliability reality

To have the same number of takeoffs and landings and never have my name in the paper.

I received that well-practiced answer when I asked a commercial wide-body pilot nearing retirement what his goals had been during his nearly 30 years flying. His credo came to mind when I saw the SQL Slammer virus in the news. I thought vendors of key IT infrastructure should have the same goals: no major crashes and staying out of the headlines.

My pilot friend understood implicitly that he was part of the transportation infrastructure and that "boring was beautiful." Every element of the aircraft, the flight procedures and even personnel assignment were centered on maximizing reliability and thus safety. IT infrastructure vendors need to be thinking the same way.

Of course, with Microsoft as the spiritual leader of the IT software industry, that's not likely to happen. And, despite Bill Gates' mea culpa and his fireworks about Trustworthy Computing, he has succeeded in lowering the standards of what Fortune 1000 firms will accept for critical infrastructure to the point that, although it appears that he still is fighting the battle, he won the war a long time ago.

According to reports, the security hole in Microsoft SQL Server prevented Continental Airlines from booking reservations and locked its hub in Newark, N.J. At Bank of America, customers couldn't access about 13,000 ATMs on the company's network (www.nwfusion.com, DocFinder: 4132).

Think back to the mid-1980s when systems like these were running on IBM mainframes. How many times did you see MVS, CICS, VTAM or DB2 in the news? "VTAM bug causes Bank of America ATM network to crash!" Try — never.

If it did, the Gordon Bethunes (Continental's CEO) of that era would have been on the phone with IBM's chairman and most likely would make public statements denouncing IBM for putting their businesses at risk. A Bill Gates "Oops, I'm sorry" wouldn't have cut it.

But these massive system failures just didn't happen. IBM's software infrastructure elements were not household names. They just ran. But they were built with a very different philosophy; reliability always trumped feature delivery.

I remember visiting IBM's Networking Division briefing center in the mid-1980s and seeing a network running IBM's next release of VTAM for MVS. (For those of you not old enough to remember, VTAM was IBM's flagship network software.)

Key features that we needed appeared to be working quite well, and I was anxious to get the new version in and running. I remember the answer to my query: "Eighteen months." I was crestfallen. This was how long it would take to complete the level of integration testing appropriate for a core infrastructure component.

Even IBM's beta programs were well-thought-out. Only sites that had specific characteristics were invited to participate. This practice contrasts with Microsoft's "law of large numbers" approach — throw your beta code at enough people, and they'll likely discover most of the flaws.

Even Microsoft's "Service Pack" approach, through which hundreds of modules can be affected, is different from IBM's surgical approach to maintenance for key infrastructure software. Service packs are just as likely to cause a problem as to fix one.

Tolly is president of The Tolly Group, a strategic consulting and independent testing company in Manasquan, N.J. He can be reached at ktolly@tolly.com.

NetVmg ups 'Net performance

■ BY TIM GREENE

FREMONT, CALIF. — NetVmg is boosting its hardware and software platform in an effort to help businesses better control costs and improve Internet performance.

The Flow Control Platform 100 and FCP 500 appliances are meant for smaller sites that aren't likely to grow significantly. Both are fixed-configuration boxes with 15M and 50M bit/sec throughput, respectively. NetVmg's earlier gear was modular, with expansion slots for adding capacity as network links grew.

Like their larger siblings, the two devices sit behind corporate firewalls and act as routing peers with WAN routers that connect to more than one ISP, a setup known as multihoming. FCPs monitor traffic flows in and out of corporate sites to determine the delay the traffic experiences and whether one of the other ISPs the company is connected to can supply faster or less-expensive service. The FCP then instructs corporate routers to use the chosen ISP.

Users can set policies so the boxes choose the best-performing link or the least-expensive link. Part of NetVmg's software upgrade, called FCP 3.0, includes creating a better balance between performance and cost.

A feature of FCP 3.0 called IntelliChoice can shift low-performing traffic to a better connection and also shift some traffic off that better connection to keep the total load on that link from peaking at a higher cost level. Before it makes the shifts, the FCP software makes sure that the traffic being shifted away will perform as well on the other link, the company says.

FCP 3.0 also can better determine which Border Gateway Protocol changes to make so it doesn't divert more traffic than necessary. The benefit is that the device won't overcorrect and reroute traffic that was performing well, NetVmg says.

NetVmg competes against other route control vendors, including Proficient Networks and Sockeye Networks.

FCP 100 costs $25,000, and FCP 500 costs $60,000. They are available now.

NetVmg: www.netvmg.com

Zultys

continued from page 17

quality over a LAN or WAN, the company says. The box also can act as a router, with support for Open Shortest Path First protocol and Routing Information Protocol.

On the client side, the MX1200 comes with SIP-based desktop software called MXIE, which combines an instant-messaging client, corporate directory and presence application. Users can make calls from the MXIE client by clicking on contact names in the application, which rings the SIP-based phones on the caller and recipient end.

Zultys does not sell SIP phones, but its product is interoperable with phones such as Cisco's SIP-enabled 7960 IP phone, and SIP phones from IP Dialog, Pingtel and Snom. A Microsoft XP desktop PC outfitted with a headset and running the SIP-based Windows Messenger application also can be used as an endpoint with an MX1200.

The MX1200 is available now and costs about $212,000 for a 1,200-user system, or about $177 per user without phones. IP phones from supported manufactures range in price from $200 to $1,000. ■

In Site: Lessons from Leading Users

School

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to the ring, and each district's network is run autonomously. So Phillips had no authority to choose a standard firewall between each district and the common WAN or to order that the various installed firewalls be set to accept incoming video calls.

Initiating a videoconference requires the calling machine to connect with the receiving machine. But if firewalls are in between, they can cause problems in two ways. First, the firewall protecting the machine being called will block the initial incoming message as unsolicited traffic. Second, both firewalls might be translating private LAN IP addresses into public IP addresses, which can create discrepancies between packets' internal and header addresses, causing them to be dropped. IP voice creates similar problems.

Even in trials with Polycom ViewStation FX videoconferencing units in which Phillips controlled the firewalls, configuring the firewalls was tricky. Although he set his Cisco PIX firewalls to allow the video traffic in and out, performance glitches arose. Sometimes, just audio would get through, but no video. He tried installing an Accord videoconferencing bridge to traverse the firewall, but that required a more complicated dialing plan that end users could not adapt to, he says. It required them to figure out what network the receiving machine resided on and to use the appropriate prefixes.

Another way around the problem was dedicating a physical port on each district's WAN switch to videoconferencing, but that would have been too much work and burned the port for other uses, Phillips says.

When he heard about Ridgeway, he set up a demonstration of its IPFreedom software between a PC in his office that was equipped with Polycom's ViaVideo gear and a PC at Ridgeway's office. He downloaded a Ridgeway client to his PC and says that in minutes he set up a videoconference with the Ridgeway representative.

Ridgeway gear consists of client software called IPFreedom Client, which runs on PCs or servers behind firewalls, and IPFreedom Server, which oversees all the clients in a user's network. The clients establish persistent TCP sessions with a central Ridgeway IPFreedom Server. The videoconferencing gear at each site is pointed at the local device running the Ridgeway software, and the clients and server in tandem act as a proxy to get traffic through the firewalls.

Because they have an established TCP session, their call notifications can get through the firewalls without being blocked. Once a call is in progress, the equipment uses just two firewall ports to shuttle traffic through. The software has the intelligence to translate IP addresses.

About 100 ViaVideo units are distributed among the Imperial County schools, and the schools have bought Ridgeway server software for about $65,000. The clients are free and are installed on servers inside district firewalls. Server capacity is priced by the number of endpoints it supports — $150 for an IP voice-only endpoint and $300 for a video endpoint, the company says. ■

WHOOSH

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IBM steps up content mgmt. play

Government regulations reinforce need to control corporate data.

■ BY ANN BEDNARZ

ARMONK, N.Y. — Tougher document archiving regulations — plus increased government scrutiny of business documents — are generating new interest in an old technology: content management.

Government regulatory requirements for archiving and purging business documents have companies looking to get a handle on electronic content to make sure they're in compliance. Other factors driving interest in content management include companies' desire to consolidate content sources and link disparate application and database repositories. In addition, many are trying to comply with partner requests to exchange product information electronically, which requires getting their content house in order.

That's where companies such as IBM are looking to cash in.

Big Blue this year will double its content management salesforce and increase research and development efforts by 25%, says Deb Taufen, director of marketing for enterprise content management at IBM. That investment comes after a strong year for the division. In 2002, IBM's digital content management portfolio, which is part of its DB2-anchored data management business, posted a 29% revenue increase for the fourth quarter over year-ago figures, and a 26% increase for the year.

"We're seeing a lot of momentum," Taufen says. "There's a lot of interest from customers who have gotten control of their structured information and now want to extend that to better manage all of the content within their organization."

And while the outlook for many software sectors remains glum, content management is attracting the attention of companies. In the most recent edition of Morgan Stanley's ongoing CIO Survey series, 33% of 225 CIOs surveyed said document and content management is a priority. It ranked third — after security (40%) and employee portal (36%) — in software spending priorities.

Content management is a broad term that covers many distinct technologies for organizing and publishing information, including structured information from a database and unstructured information such as audio or video files. It encompasses document management, which pertains to organizing, routing and managing typical business documents; Web content management, which tackles creating, storing and publishing Web site material; digital asset management, for storing assets other than text, such as graphics, photos and video; and records management, for electronic record-keeping oversight.

IBM — and others — are looking to capitalize on a market that grew up piecemeal, according to analysts.

In the past, companies adopted content management systems to solve a specific need. A retailer might have had technology for dealing with catalog content, and then in the rush to establish an online presence, built a new system for Web content independent of the old system says Jim Murphy, senior analyst at AMR Research. Today, companies want to deal with all their content in an integrated fashion and administer fewer applications.

IBM approaches the market as a database expert, Murphy says. Its pitch is that the underlying database technology, on which IBM's Content Manager line is built, can reconcile disparate Web content, document and digital asset management systems. "The database angle unifies all of those systems, so a company could save all kinds of assets in the same database," he says.

IBM isn't the only database vendor with its sights set on content management. Oracle and Microsoft also are interested and bring database and search technologies to the table, Murphy says.

The three companies are encroaching on the content management market by beefing up their database products, which can store document content, digital assets, Web content and, in some cases, XML content, Murphy says. The database vendors also have built in better search, versioning and access control features. "Those functions are no longer necessary from the content management vendors," he says. "IBM, Microsoft and Oracle all are eating away at the bottom of the market."

Nonetheless, Murphy says IBM is not yet viewed as a direct competitor to pure-play document management vendors such as Documentum or FileNet. Its offerings are still immature and best-suited for companies with a big investment in IBM or a little

See IBM, page 24

Power play

IBM is paying more attention to the content management market.

Strengths

- Database expertise.
- WebSphere, Lotus groupware resources.
- IBM marketing muscle and development dollars.

Challenges

- No true Web content management offering.
- Limited document management features compared with competition.
- Incomplete coordination among DB2, Lotus and WebSphere brands.

Short Takes

■ **Gores Technology Group** last week said it would acquire application and traffic monitoring software maker **Resonate** for about $53 million. While the stock transaction will be subject to customary regulatory and Resonate stockholder approvals, GTG says it expects the deal to close in the second quarter of 2003. Until then, GTG plans to distribute Resonate products, such as its Commander line of application performance management software, via the Aprisma salesforce. GTG in August purchased network management software maker Aprisma from its then-Cabletron-sibling Enterasys. Aprisma makes its Spectrum network management software, which the company says manages service levels across network, systems and applications. Resonate develops application performance management software that, when coupled with Aprisma's Spectrum portfolio, will give customers tools to manage the growing wave of Web services.

Sana Security claims cure for server intrusion

■ BY ELLEN MESSMER

SAN MATEO, CALIF. — Start-up Sana Security this week will introduce software it says can learn normal server activity and detect or block abnormal behavior, such as buffer-overflow attempts, which aims to subvert the server's security.

The company's Primary Response offering is one of a new breed of behavior-blocking products that have been proven capable of stopping new and unidentified attacks — in contrast with signature-based defense, which depends on a specific attack definition. The downside of behavior-blocking technology is that it can require a lot of management to make it work. Sana says its product, which starts at $6,500, spares the administrator the management burden because Primary Response, which runs on Sun Solaris and Microsoft Windows servers, uses artificial intelligence to monitor and learn individual server communication patterns.

According to Sana's founder and chief scientist, Steven Hofmeyr, the administrator loads the Primary Response agent onto the server and decides whether to have suspicious activity reported to the Primary Response console or blocked. Beyond that, there's no need to configure it. But it does take a while for Primary response to determine what is to be considered typical, legitimate activity.

"These software agents are profiling the normal behavior of the server program and the operating system," Hofmeyr says. "It starts off ignorant, but in a day or two, it knows what to do and has a means of detecting when the system is using something not normally used."

Some customers, including home and garden retailer Smith & Hawken in Novato,

See Sana, page 24

'NET INSIDER

Scott Bradner

Familiar welcome to the new year

We did not get far into the new year before the inevitable happened. Yet another fast-spreading worm struck a Microsoft product, bogging down big chunks of the Internet and taking a few tens of thousands of servers off the 'Net. Like the last few times, this attack would have been prevented if managers of Microsoft systems had only kept them up to date by applying the latest security fixes.

It only took 20 minutes after the attack started about at 12:30 a.m. EST Saturday, Jan. 25, for the first message about it to show up on the North American Network Operators Group mailing list (www.nanog.org/mailinglist.html). At 1:28 a.m., the fact that the attack abused User Datagram Protocol (UDP) Port 1434 was posted, which was enough information for most network operators to know what to do to block the impact.

The notification came too late to have much of an effect on propagation because most of the worldwide spread seemed to happen within the first few minutes. Information about the attack and how to fight it did not propagate as fast as the attack, but was available long before most network managers woke up and figured out they were under attack.

This worm's propagation speed was a testament to Microsoft's success in the marketplace and a poster child for the fact that there is no reason to be sanguine about the ability of the Internet or, more particularly, the systems on 'Net to resist a concerted attack. The software monoculture of today's Internet and the unwillingness of system operators to do what is needed to keep their systems up to date securitywise mean that this is far from the last successful attack we will see.

System operator unwillingness seems to be the result of a number of factors: the frequency of updates; an assumption that updates should not be done when they come out because they might introduce more bugs than they fix; and the disruption required when an update is done.

In the spectrum of attacks, this was quite benign. Installing the patch you already should have installed and rebooting did the trick; no rebuilding disks from scratch and hoping that the backups would work. So whoever launched this worm was after disruption, not destruction. Someone with a touch more malice in his heart would have made for a very bad weekend.

One real puzzle about the attack has not been resolved as I write this. It seems that about 13,000 of Bank of America's automated teller machines went down during the attack. The puzzle is, WHY? If the bank is putting its ATMs directly on the Internet, it is demonstrating a confidence in the 'Net that few other folks do. If it was because of a leak though a firewall that hit some Microsoft server that ran the ATM network, then the bank needs better firewall folk. But we might never know — the answer might just be too embarrassing.

Disclaimer: Causing embarrassment sometimes seems to be a Harvard mission, but I did not ask the university about this case — it's all my own puzzlement.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@sobco.com.

IBM

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bit of time to wait for IBM to build out its product set, he says.

Inside IBM, developers are working to gel its content management offerings, Taufen says.

One new area for IBM is records management. In November, IBM bought Tarian Software for its records management and e-mail archive infrastructure. Tarian's software doesn't store content, but it applies policies and rules for capturing, retaining and disposing of information to all a company's applications that store content.

IBM has tied the Tarian software to its Content Manager suite, Taufen says. This year, IBM will work to integrate Tarian with its Lotus line of e-mail and collaboration software, Taufen says.

The effort makes sense, analysts say. "Increasingly, records management functionality is becoming a big driver for end-user organizations," says Karen Shegda, research director at Gartner. The research firm predicts that by 2005, half of all global 2000 companies will have adopted records management technology.

IBM isn't the only vendor to notice that trend. In December, Documentum acquired another electronic records management technology developer, TrueArc, Open Text and Hummingbird also have purchased records-management companies, Shegda says.

Also this year, IBM plans to step up its code-sharing efforts with respect to content management, Taufen says. The content management division has standardized on the WebSphere application server and is continuing efforts to port its multiple content management products to a common platform — one that makes better use of DB2, she says.

"Increasingly, records management functionality is becoming a big driver for end-user organizations."

Karen Shegda
Research director, Gartner

By more tightly integrating with DB2, the content management products gain advanced search capabilities, such as cross-repository search, and some security and digital rights management functionality, Shegda says.

Web services support, including Simple Object Application Protocol support, also is on tap this year, Taufen says.

IBM has its work cut out for it, analysts say. The company's content management resources are fragmented, Shegda says. IBM Content Manager includes document imaging and document management capabilities, along with tools for handling rich media such as audio and video content.

Meanwhile, IBM's Lotus division has collaborative document management capabilities, WebSphere MQ has workflow tools, and WebSphere Portal has a few basic Web content management features.

Together, these resources make for a broad content management suite. However, they aren't tied together well, Shegda says. "If IBM wants to move more into the broader content management picture, they need to make their offerings more cohesive," she says.

Also, within the content management family, there's consolidation work to be done, Shegda says. Content Manager has a repository that handles standard documents and images, and it has Content Manager OnDemand, which is a separate repository for handling mainframe information. Merging those two into a single repository for all types of digital content, including mainframe reports, would make administration easier for users, Shegda says.

In terms of features, IBM's content management portfolio lacks sophisticated Web content management tools. Those included in IBM's portal offering are lightweight and not geared for high-volume use, AMR's Murphy says. "What IBM clearly doesn't have yet — and hasn't made a really bold move into — is Web content management," he says.

Meanwhile, IBM is not alone in upping its content management offerings. Other vendors with product enhancements include:

- FileNet, which just launched its redesigned FileNet P8 platform. The new platform lets customers build systems using just the modules they need. It includes modules for managing business processes, enterprise content, Web content and images.
- Vignette, which started shipping its V7 family of products in January. New tools include a graphical workflow modeling tool and integration workbench designed to make it easier to build Web sites and portals.
- Venetica, which unveiled a new release of its flagship suite for integrating disparate content repositories. VeniceBridge 5.0 can handle more content types and has a common in-box for disparate workflow engines, the company says.
- Progressive Information Technologies, which released a new version of its Vasont content management system. New to Vasont 8.0 are multilanguage translation capabilities so that organizations can manage and edit multilingual content from a single source.
- GlobalScape, which released a new Web content management system, PureCMS, targeted at small and midsize businesses. ■

PROFILE: SANA SECURITY

Location: San Mateo, Calif.

Founded: October 2000

Founder: Steven Hofmeyr, chief scientist

Employees: 24

Product: Primary Response, intrusion-prevention software for servers.

Funding: $12 million from the Entrepreneurs Fund, Esther Dyson Ventures and Sevin Rosen.

Fast fact: Hofmeyr, who holds a doctorate in computer science from the University of Mexico, spent a year at the Artificial Intelligence Lab at Massachusetts Institute of Technology and is on the program committee for the Artificial Immune Systems workshop at the IEEE World Congress on Computational Intelligence.

Sana

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Calif., which has been beta-testing Primary Response, back up the claim that the software can learn on its own without needing the administrator to configure.

"It really does detect changes and anomalies," says Smith & Hawken CIO Tammy Lowe. "We've had people try and attack us from [other] countries, and it's detected and blocked." After months of testing it in a data center, Smith & Hawken is rolling out Primary Response across the company.

Primary Response can monitor Web-based and customized applications, and in the coming months, Sana plans versions of Primary Response to run on Linux and AIX. Sana aims to compete against Entercept, Harris, Okena (which Cisco recently acquired) and Stratum8, among others that also market host-based software using this type of behavior-blocking defense. However, Sana has no immediate plans for a desktop version of its software.

Sana: www.sanasecurity.com

ServiceProviders

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■ WIRELESS ■ REGULATORY AFFAIRS

Short Takes

■ The U.S. Bankruptcy Court for the Southern District of New York has approved **Level 3 Communications'** planned acquisition of **Genuity.** Genuity announced it will lay off 700 to 800 more employees. Level 3 is expected to offer permanent positions to about 1,400 to 1,500 Genuity staffers, but the final number of employees is not guaranteed at this time. Level 3 announced its plans to acquire Genuity for $242 million in November as the ISP filed for Chapter 11 bankruptcy protection. The companies expect the acquisition to close this month. www.level3.com; www.genuity.com

■ **SBC** last week launched a portfolio of **managed services** designed to appeal to **midsize businesses** that are thinking about outsourcing some or all their network and telecom needs. In the past, SBC has concentrated on selling managed services only to large businesses. SBC will market the services under the brand name **PremierServ.** The packages will include a number of options, including long-distance voice, local voice, Internet, data transport, managed customer premise equipment, hosting and security. Initial services will include ATM, frame relay, IP VPN, managed remote access services, e-services, video services, integrated access service, premise-based IP telephony and security. SBC will manage both LANs and WANs, including network equipment that customers own.

■ **The MPLS Forum** and **Frame Relay Forum** plan to merge their organizations to coordinate activities and gain operational efficiencies. Pending approval of members from both organizations, the merger should be completed by March 31. **Association Management Solutions,** manages both forums and is looking to align their technical directions. Frame relay access to a Multiprotocol Label Switching network core is coming into vogue in the industry.

Q&A How Cogent digested PSINet

While many communications providers that sprang up in the late 1990s have been filing for bankruptcy, ISP Cogent Communications has made news by acquiring the assets of its cash-strapped counterparts. In early 2002, the company, which offers high-speed Internet service to customers in buildings attached to Cogent's fiber network, purchased Allied Riser and once-powerful PSINet to expand Cogent's footprint. CEO Dave Schaeffer recently sat down with Network World *Senior Writer Michael Martin to discuss how Cogent has handled the integration of PSINet and how the company plans to grow.*

STAN BAROUH

How is the integration of PSINet going?

It's basically complete. There are three buckets in that integration. The first is the integration of the network, the second is the integration of systems, and the third is the integration of the customers.

In terms of the physical network, we started out with a belief that the architecture we deployed, which is a Layer 3 protected network, was the most scalable and cost-effective. PSINet operated a fairly unique network architecture in being predominantly a frame network. So what they did was they aggregated traffic at the edge through frame switches, brought that traffic into their IP routers and carried the IP traffic onto a frame backbone.

We felt a pure IP over [dense wavelength division multiplexing] network made a lot more sense. We divided the PSINet network into segments. We then took each segment and diverted the traffic onto the Cogent network. We then dismantled that portion of the PSINet network, taking all of the equipment and repatriating it into a central warehouse. We then took that gear and redeployed it to expand our network footprint.

What did you have to do for the systems?

In terms of systems, there are four main categories — network monitoring and surveillance systems; customer-facing systems like the contact database and billing systems; the asset and inventory systems; and the accounting and back-office systems. We compared those with what we had and used the best.

And the customers?

For customers, we put in place an outreach program that included e-mail notifications and outbound calls to customers to let them know what was happening with their network and letting them know we were committed to continuing their service and maintaining a high quality. That culminates in entering into new contracts with the customers when their contracts terminate.

Many existing contracts were multiyear deals at prices that were significantly out of market, based on today's market environment. So we contacted those customers and negotiated new contracts.

Have most of the customers stayed with you?

Yes. We expected some attrition, and we have had some. But the majority of the customers have stayed with us.

Do they still buy the same services they got from PSINet?

There are a few modifications. Because our pricing structure is much lower, we migrated customers who were on-net to Cogent to our 100M bit/sec Ethernet product from T-1 services. For other customers we lowered prices and have seen them increase their bandwidth purchases. Within the data centers our emphasis has been on pure collocation, instead of a spectrum of managed services. We've encouraged customers to move from managed hosting to pure collocation, reducing their costs and picking up additional management responsibilities.

What did you do with the customers who were getting frame connections from PSINet?

We have converted them to Layer 3 VPNs. We don't support Layer 2 frame.

People weren't upset they were being switched from frame to IP?

Not really. We tried to make this as transparent as possible for the customer. That, coupled with the fact that we usually lowered their cost, made it go over well.

How is the Ethernet access business growing?

We continue to grow that business in a difficult environment. We continue to add on-net buildings at about 1.5 buildings per day. We have over 600 buildings on-net now.

How are you doing financially?

Our public data shows we're still burning cash. The majority of that cash burn though is earmarked for the expansion of the network. If we stopped growing, we'd be about cash-flow neutral.

Why are you still growing when other companies are standing still or cutting back?

A big part of the reason is, we did a lot of work before we began building on how we would reach our addressable market. We wanted to understand where end-user demand was. We have about 7,400 miles of metro fiber comprising 138 rings. We have about 3,000 buildings that meet all of our criteria. Our architecture gives us a low cost, and if we get to customers in those buildings we'll continue to get market share. ■

EYE ON THE CARRIERS

Johna Till Johnson

A better way to measure true costs

Last week we discussed the concept of total cost of service delivery. In a nutshell, it is an approach for measuring the value of technology based on the assumption that you're putting the technology in place to help accomplish a business function.

Why add a new buzzword when we've already got tried-and-true total cost of ownership (TCO) and return on investment (ROI)? Because, in my experience, neither model adequately captures the true effect of technology on a business. TCO is great if you're worrying about running your IT department less expensively: A product that requires two engineers to manage is clearly an improvement over a product that requires 10. Unfortunately, this approach doesn't tell you whether buying that product was a good idea in the first place. ROI tries to address this weakness by asking about the return on a given technology investment, but there are precious few clues as to how to quantify that return.

Enter TCSD. The fundamental concept is that technology — even infrastructure technology — is deployed in the service of a particular business function (or "service"). To measure the value of the technology, look at the role it plays in performing that function.

An example: An accounting service might require two accountants, a specialized analytics package, hardware and software, and a network. But you might be able to offer that same service with no accountant, no specialized analytics, and just the hardware, software and network — clearly an improvement in TCSD.

Some guidelines for computing TCSD:

1. Start by defining the service using business terms. It's not enough to know that FTP makes up 12% of your WAN traffic; you need to ask what applications are generating that FTP traffic and why. Is the research and development department sending CAD/CAM files? A switch updating its call records? Find out who in your business owns that application, and open a dialogue.

2. Understand the performance parameters of that business function. Do files have to be updated hourly? Why? What happens if they aren't updated on that schedule? Would the ability to perform synchronous updates be an improvement? Take your time with this step, and be creative. Many times, business units do things a certain way because they're unaware that better technology can provide improvements.

3. Translate the business performance parameters into technical parameters. If the goal is to perform synchronous updates, what does that mean in terms of megabits of bandwidth and milliseconds of latency?

4. Compute the current cost of providing the current service by including infrastructure hardware and software, business applications, and personnel. Be sure to include costs that are borne by the business unit (not just IT): the cost of a business specialist, for example, or specialized software.

5. Now you can start your modeling. Is there a different combination of hardware, software, services and humans that could deliver the same service at a lower cost or measurably improve the service's quality? Offering synchronous updates at no extra cost might directly benefit an organization's top or bottom lines.

Johnson is president and chief research officer at Nemertes Research, a technology research firm. She can be reached at johna@nemertes.com.

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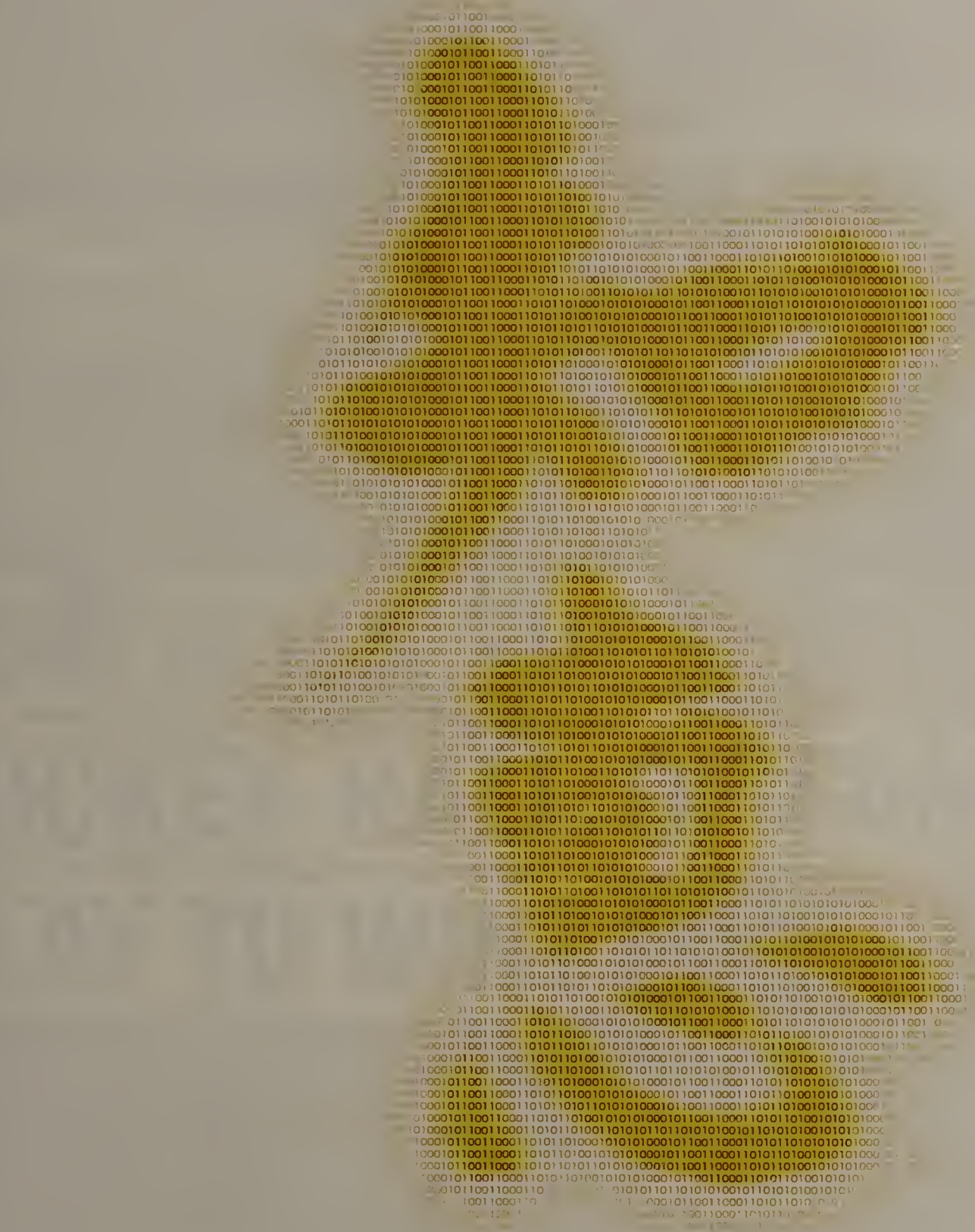
nttverio@ntt.com



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Special Focus

DATA SERVICES: Price outlook mixed.

How low can rates go? . . . It's worth asking

■ BY DENISE PAPPALARDO

Today's economy is driving users to maintain existing investments in traditional data services. Despite a lot of hype and increasing adoption of IP VPN technology, businesses are happy to stick with tried-and-true frame relay and private-line offerings.

But sticking with what works doesn't mean users can't lower monthly service costs. Lower service rates are still available, especially if it has been more than two years since your last contract negotiation.

Embarcadero Systems recently renegotiated all its long-haul dedicated T-1s on the West Coast and reduced its monthly expenses by two-thirds, says John Montgomery, director of technical services at the San Francisco shipping company.

"T-1s are pretty cheap right now," he says. "Even though we already had a contract, we were able to renegotiate with AT&T and Sprint for lower rates." Carriers will not always renegotiate contracts before they expire, but are motivated to do so when customers have other options and big budgets.

Montgomery lowered rates for six dedicated T-1s. He also says he looked into setting up two T-1s from California to Miami for a new project.

"We expected to pay around $10,000 per month for the connections, but we were getting quotes for $5,000," he says. While the project fell through for other reasons, Montgomery was surprised at how "cheap" it is to support dedicated connections across the country.

Although Montgomery says Embarcadero was able to lower its monthly private-line bill, one of its carriers, AT&T, says its listed prices are creeping up.

Fractional T-1 and full T-1 prices have gone up 2% to 5% and 1% to 2% respectively over the past year, says Steve Sobolevitch, vice president for AT&T Business service pricing. He attributes the increases to "a return to rationalization in pricing."

"The market couldn't sustain the types of price declines we were seeing," Sobolevitch says. Private-line service is not a growing piece of business, which is why prices have stabilized and in some cases have increased, he says. If the service isn't generating additional revenue, the carrier is not motivated to offer more aggressive pricing.

All carriers offer discounts for customers that have large networks or commit to spending a certain amount.

While AT&T says some private-line prices are on the rise, WorldCom says its prices still are declining.

"Prices have dropped 20% to 25% [for T-3, 45M bit/sec private-line services] in the last 12 months, which is small in relation to previous price declines," says Ronnie Bailey, senior director of data services at WorldCom.

Like AT&T, WorldCom is not offering huge price cuts on its lower-speed private-line services, but its fractional T-1 and full T-1 services have come down 10% to 12% in the last year.

Sprint refused to provide pricing information or an executive to be interviewed for this story.

One firm that tracks and analyzes pricing and usage trends around the world says prices still are coming down. "But the dip isn't as dramatic as it has been in past years," says Robert Schult, senior analyst at TeleGeography.

From January 2001 to January 2002, dedicated OC-3, 155M bit/sec links between cities such as New York and Atlanta, and Boston and New York dropped by 60% to 65%.

Since January 2002, prices dropped another 20% to 25% for the same bandwidth between the same cities, Schult says. The research firm looks at the five lowest prices and runs an index based on those averages. Prices on some of the most popular routes, such as those between New York and Miami, and New York and Los Angeles, have dropped only 10% to 15%, because these routes already were competitively low, he says.

Carriers also have tapped the brakes in terms of cutting frame relay prices.

"Over the last three to four years we've seen frame relay price declines of 5% to 10% per year," says Ron Kaplan, analyst at IDC. But carriers are slowing the rate of declines, because of the slow economy and the changing telecom market, he says.

"Prices have dropped 20% to 25% [for T-3, 45M bit/sec private-line services] in the last 12 months, which is small in relation to previous price declines."

Ronnie Bailey
Senior director of data services, WorldCom

"Instead of trying to grab [market] share like all the carriers were trying to do at the height of the telecom boom, carriers are more focused on their bottom line," Kaplan says.

AT&T frame relay customers who have midsize to large networks should expect lower prices than they saw the last time they signed a contract, analysts say.

"There has been a 5% decline in prices for customers that move from low-speed frame relay to high-speed," Sobolevitch says. These include those who had 56K bit/sec frame relay and moved to T-1 or NxT-1 services.

Competition in the market and pressure from IP services continue to drive down frame relay prices. But the price declines are not as sharp as they once were, because IP is now sold as a flexible network alternative, not just as a low-cost network option, Sobolevitch says.

WorldCom customers who move from lower-speed frame relay services to higher-speed T-1 and NxT-1 offerings also are seeing lower service rates. WorldCom has cut T-1 ports by 10% to 12%, Bailey says.

"The average cost for a 512K bit/sec port is about $425 per month, which is lower than it was 12 to 18 months ago," says David Willis, analyst at Meta Group. This is based on late 2002 prices, he says. In 2001, the average cost for a 512K bit/sec port was $495 per month. That translates to $7,000 per month or $84,000 per year that a customer with a 100-node frame relay network would save.

Users also pay an additional permanent virtual circuit charge, which on average costs about $25 per PVC, per month. PVC costs also have come down about $10 per PVC, per month, since 2001.

Frame relay customers also can negotiate lower cost by exploring other service options. "If a customer that's up for a frame relay contract renewal tells their carrier they are thinking of moving to an IP VPN service with a different carrier, they will see a very large price decrease for their new frame relay contract," IDC's Kaplan says.

In some cases, users have reported up to a 40% decrease in price for the same frame relay network, he says. It's recommended that users explore an IP VPN option and get a quote before using this as a bargaining tactic.

According to analysts, one cost for private-line and frame relay service that is not coming down is the cost of local access.

"In 2000 it was common to get T-1 local access for $125 to $150 per month," Willis says. "Now it's $175 to $240 and in some markets its up to $300 per month."

"One of Meta's clients, a well-known pharmaceutical company, sees 55% of their total WAN costs going toward local access charges," Willis says. And that percentage seems to be rising, he says.

This is leading to network consolidation in which users are opting for higher-bandwidth pipes just to reduce the number of local access lines they have. Willis also expects this trend to further fuel voice and data convergence in the near term.

While local prices are still high, Kaplan says they might become more competitive later this year and into 2004 as more incumbent local exchange carriers receive regulatory approval to offer services outside their traditional areas. But for now, users are left to consolidate the total number of access lines or to work with the few competitive local exchange carriers that are still in business. ■

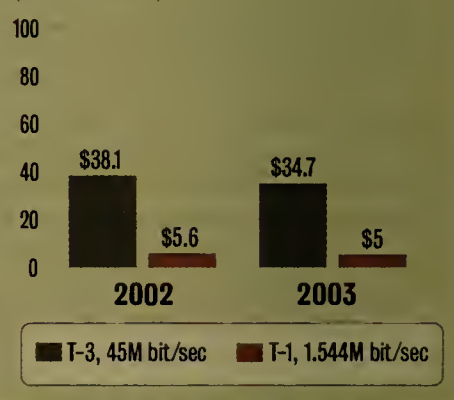
Traditional data service price landscape

Frame relay costs have dropped about 10% to 20% since mid-2001. Here is how much you would pay for a T-1 frame relay port with 10 64K-bit/sec PVCs.

AT&T:	$4,055
WorldCom:	$5,073
Sprint:	$4,688

All prices are based on retail list prices that are not discounted. Discounts could range from 30% to 70%.

Private-line prices also are coming down, but not as dramatically.



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Net.Worker

■ PRODUCTS, SERVICES AND STRATEGIES FOR TYING TELEWORKERS TO THE ENTERPRISE

Three reasons to buy broadband

■ BY TONI KISTNER

LAS VEGAS — For the majority of U.S. online households, broadband still fails to deliver enough bang for the buck. Of the 76.5% who still used dial-up last year, 42% said they didn't need it and 32% said broadband was too expensive, according to a recent In-Stat/MDR report.

Service providers know to spur demand they must offer compelling applications on top of the connection. With the exception of some home-network packages, such offerings haven't yet materialized. Although, products that require a broadband connection are beginning to crop up. At the recent Consumer Electronics Show, three offerings were on display.

D-Link debuted its i2eye DVC-1000 VideoPhone, a broadband appliance that delivers IP videoconferencing via TV. The device sits on top of a TV and features an adjustable tilt/focus camera lens and integrated microphone. You place calls via the interface you control with a remote. To speak, you can use an analog phone plugged into the back of the box, or talk directly into the built-in speaker.

In a demonstration, D-Link streamed video between its show booth and the company's Irvine, Calif., conference room over a 225K-bit/sec connection. Video quality was good at 24 frames per second. The device requires a minimum 96K-bit/sec connection. The i2eye costs $300 each or $500 for a pair, and is available this month. D-Link says it plans to launch a small business version later this year.

Motorola unveiled a broad-reaching broadband strategy at the show, including a line of wireless cable modem gateways and 802.11b access points, adapters and routers. In a joint venture with Xanboo, Motorola also is developing a line of Internet home control and remote monitoring devices. Products will include a home gateway, camera, sensors and motion detectors. They use 802.11b wireless and require a minimum 56K-bit/sec bilateral broadband connection. The home control equipment is expected to ship this spring.

Network executives looking to reduce teleworkers' phone costs might consider Vonage DigitalVoice. The voice-over-IP service provides unlimited national calling for $39.99 per month, or 500 minutes for $19.99 per month. Vonage's VoIP network is based on Session Initiation Protocol and requires a minimum 90K-bit/sec bilateral connection.

The service includes a phone adapter box (Cisco's ATA 186) that plugs into an analog phone and broadband router. One option is to plug the box into a cordless phone base station to distribute the service to up to six handset extensions.

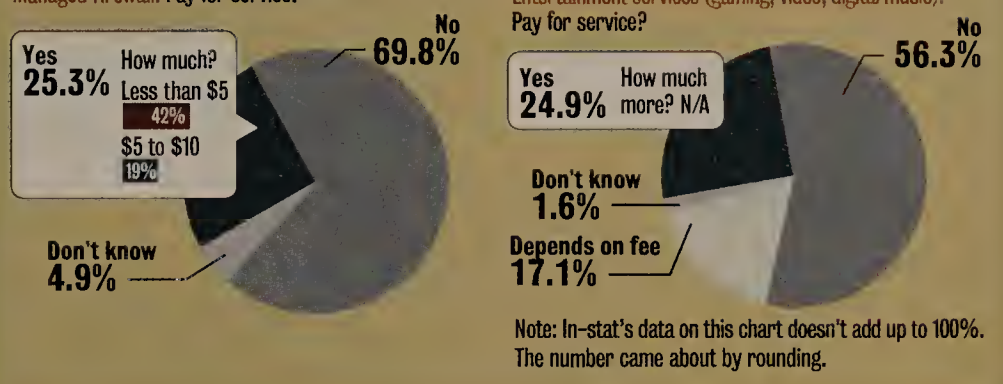
DigitalVoice includes voice mail, call waiting, call forwarding, caller ID, and three-way calling. Users can add and subtract features, manage the account, and retrieve voice mail via the Vonage Web site. You also can select an area code that matches that of the main office.

Vonage also offers an unlimited small business package for $69 per month, or 1,500 minutes for $39.99. Future plans include offering fax service, and a deal with local exchange carriers to offer Digital Voice as a premium service to broadband customers is in the works.

Vonage: www.vonage.com; D-Link: www.dlink.com; Motorola: www.motorola.com

A tough crowd

Most broadband subscribers don't want to pay more for services, according to a new In-Stat/MDR survey.



Note: In-stat's data on this chart doesn't add up to 100%. The number came about by rounding.

SOURCE: IN-STAT/MDR REPORT: CONNECTED HOME SERVICES: SERVICE PROVIDERS TAKE ON THE HOME NETWORK

Short Takes

■ Rural Britains are banding together to persuade **British Telecom** to provide their small towns and villages broadband access. Because BT will consider deploying high-speed access when a community preregisters at least 200 (and in some areas 400) potential subscribers, local citizens are distributing flyers and building Web sites urging their neighbors to sign up. National group Broadband4 Britain says it has signed up more than 200 "local heroes" to spread the word, with a goal to ensure all businesses and homes can get affordable broadband access by year-end.

Mitel adds IP phone for teleworkers

■ BY TONI KISTNER

Most network executives don't think twice about supplying corporate teleworkers with standard PCs with secure connections. Yet, extending the PBX to the home is often dismissed as too costly, with complicated configurations requiring a visit to the teleworker's home.

So instead, the company pays for a second phone line and often a cell phone, and residential long-distance rates. The company risks paying more money in the long run, and teleworkers risk projecting a disorganized, less-professional image.

Last week, Mitel Networks introduced a voice-over-IP phone system that addresses these problems. The 6010 Teleworker Solution is new software added to Mitel's existing MAS 6000 application server. Geared toward corporate teleworkers and small businesses that lack an IT professional, the 6010 provides simplified configuration, beefed up security, and other features that make it easy for workers to shift between the office and home environments. The 6010 works with Mitel's 3100 or 3300 Integrated Communications Platform IP switches and 5020 IP phones.

Most corporate home offices have a broadband connection, and a network address translation (NAT) router that supplies the devices on the home LAN dynamic IP addresses. Typically, IP phones require a static IP address on the home network. But the 6010 lets the phone tunnel out of NAT. As it hops across the Internet, the connection captures the header information, which includes the changes in IP addresses, then reverse-embeds them to find its way back to the phone.

Mitel says teleworkers can configure the phone themselves. They just plug it into an Ethernet port, and punch in the IP address of the corporate network on the keypad.

Security includes 128-bit encryption of the voice session. Teleworkers can connect the phone to the PC to manage calls from the desktop. However, to ensure the PC isn't hacked from the phone, the MAS terminates the data VPN on the PC rather than the phone.

The phone provides all the standard enterprise calling features, as well as phone twinning, which allows two IP phones, one in the corporate and one in the home office, to ring simultaneously. Because the switch is built into the phone, there's one less box sitting on the teleworker's desktop.

Key line appearances let managers monitor who's on the phone, and linking remote and in-house workers lets them better control calling costs. For 24 users, the 6010 Teleworker Solution costs about $500 per worker, including the IP Phone.

Mitel: www.mitel.com

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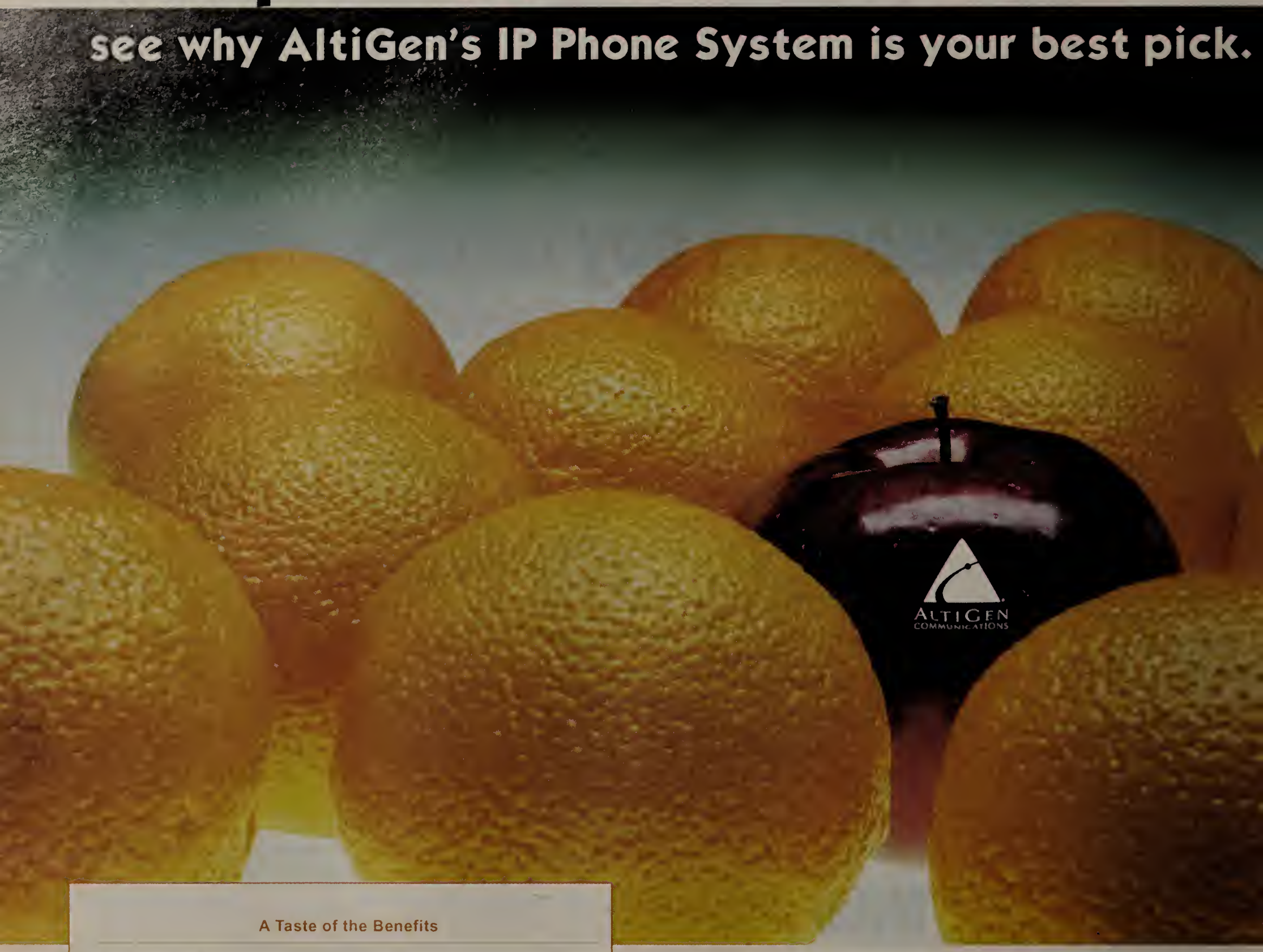

A Taste of the Benefits

Desired Features:	AltiGen Phone Systems	Traditional Phone Systems
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Saves administrative costs	✓	
Cuts toll costs	✓	
IP, digital and analog trunking	✓	
Traditional voice calling	✓	✓
VoIP calling	✓	
IP and traditional phones	✓	
Voice mail	✓	✓
Automatic Call Distribution (ACD)	✓	✓
Automated Attendant	✓	
Unified Messaging	✓	
Web interactions: Web push, chat, click-to-talk	✓	
Home-based teleworkers/call center agents	✓	
Built in redundancy	✓	✓
Integrated Contact Center	✓	

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Technology Update

■ AN INSIDE LOOK AT THE TECHNOLOGIES AND STANDARDS SHAPING YOUR NETWORK

SSL: The secret handshake of the 'Net

■ BY MATT ROLLENDER

Secure Sockets Layer has become the de facto standard for secure communications between end users and Internet sites, and today, SSL support is built into virtually every browser.

SSL is a protocol layer that includes two subprotocols — the SSL handshake protocol and the SSL record protocol. Both provide authenticated, confidential and tamper-resistant connections to applications, particularly HTTP. SSL's small footprint fits neatly into the Internet's processing stack, and above TCP/IP and below the application layer without significantly affecting the other protocol layers. This small footprint also allows it to be used with other Internet applications, such as intranet and extranet access, application security, wireless applications and Web services.

SSL enables secure data communications over the Internet by encrypting data leaving the browser and decrypting it after it is secure in the data center. Likewise, transmissions back to the client are encrypted before they are sent over the Internet.

Got great ideas

■ *Network World* is looking for great ideas for future Tech Updates. If you want to contribute a primer on a specific technology, standard or protocol, contact Amy Schurr, senior managing editor, features (aschurr@ nww.com).

At a high level, SSL sessions consist of two parts: the connection and the application session. During the connection, the client and server exchange credentials and negotiate the security parameters. If the client accepts the server's credentials, a master secret is established and used to encrypt all subsequent communications.

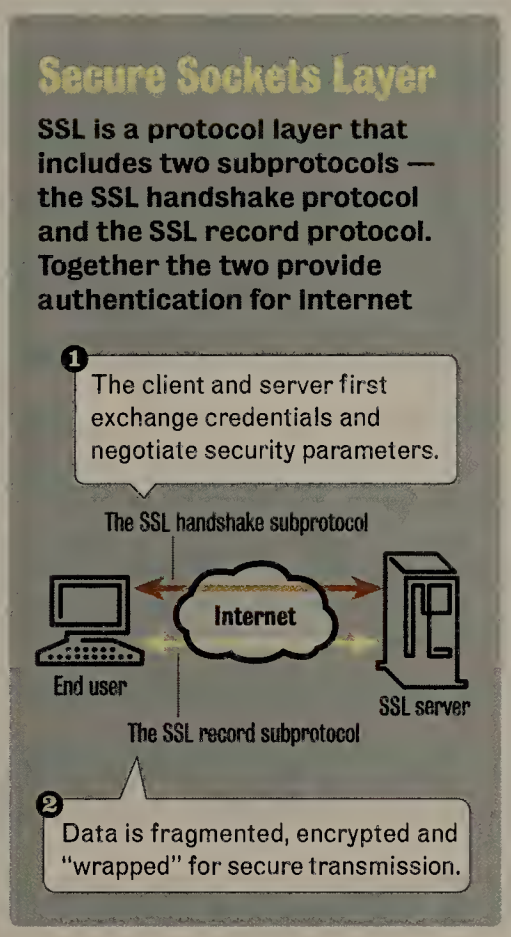
During the application session, the client and server securely pass information between each other, such as credit card numbers, stock trading data, personal medical data and other types of sensitive or confidential data.

SSL provides three key components for security:

- **Authentication** — the ability to verify the server or both the server and client at each end of the connection.
- **Confidentiality** — the ability to encrypt traffic, so only the two parties exchanging the information can access and understand it.
- **Integrity** — the capacity to prevent message contents from being modified without detection. Receivers can be sure they have received unaltered information.

A key piece of the secure communication process is authenicating the two parties. The SSL handshake subprotocol handles this function. A series of messages between the server and client facilitate these actions:

- Authenticate the server to the client.
- Let the client and server select the cryptographic algorithms and level of security they want.
- Optionally authenticate the client to the server.
- Use public-key cryptography to generate shared secrets that will be used later to transmit the actual confidential data.
- Establish the SSL connection.



The SSL record subprotocol is responsible for the encrypted data transfer. Here are the actions taken to facilitate this:

- The data is broken up into small, usable chunks called fragments.
- The data is protected from alteration via an integrity "wrapper."
- The data is encrypted, and the wrapper is appended.

Historically, many of the original applications that used SSL, such as e-commerce, did not perform client authentication. This was done outside the SSL protocol via some out of band information such as a name/credit card number combination or some other client-provided data, such as a password.

However, corporations now are adopting SSL as a protocol for new applications in the data center. For applications such as SSL-based VPNs or those that require additional verification of end users, client authentication is becoming a requirement.

Client authentication lets a server confirm a user's identity within the protocol using the same techniques that allowed the client to authenticate the server. While the detailed message-flows for this type of authentication are significantly different, the process is the same conceptually as for server authentication.

This process also takes place within the SSL handshake subprotocol. In this case, the client must present a valid credential (a certificate from a trusted certificate authority) to the server. The server uses this information to validate the end user with standard techniques using public-key cryptography.

SSL's pervasiveness is because of its flexibility and robustness. Expect to see SSL's usage continue to increase dramatically as it becomes a key protocol for enterprise applications, wireless access devices, Web services and secure access management.

Rollender is director of marketing for Nauticus Networks. He can be reached at mrollender@nauticusnet.com.

Ask Dr. Internet

By Steve Blass

Is there a way to connect customer networks that use the same internal IP address space (10.X.X.X) to a managed service provider's connection? We want to connect multiple customers who use the same internal addresses. We have Computer Associates' Unicenter at the network operations center to monitor multiple customer networks.

This problem finally might push IPv6 ubiquity into the Internet backbone. Matching IPv4 addresses can be name-mangled and translated into IPv6 addresses quite nicely. To accomplish the task today one must ensure that static network address translation (NAT) addresses are in use on the customer site so there is a stable one-to-one mapping from private to public addresses. The public addresses are added to the management platform by hand rather than through autodiscovery, and the customer firewall must be configured to let User Datagram Protocol (UDP)-based management traffic such as SNMP traverse the Internet boundary. To manage devices inside the firewall that don't have public NATs, use a local management 'console' inside the customer network (which needs a public NAT) to communicate with the central management facility. More background can be found at previous Dr. Internet columns (www.nwfusion.com, DocFinders 4133 and 4134) and in the expert forums.

Blass is a network architect at Change@Work in Houston. He can be reached at dr.internet@changeatwork.com.

GEARHEAD INSIDE THE NETWORK MACHINE

Mark Gibbs

Automate with Automate

A few months ago we reviewed an automation product called OpalisRobot (see www.nwfusion.com, DocFinder: 4140). We liked it a lot, and several readers said that if we liked that product, we'd love Automate 5 from Unisyn.

We finally took a hard look at the product and, well, wow!

Automate 5 is amazing, letting you automate a slew of repetitive tasks and going much further than any similar product we've seen. It even lets you send keystrokes to applications, add and remove items from the clipboard, move and detect the position of the mouse, and ... well, the list is huge.

Automate 5 tasks can be triggered by a range of events, including time schedules, key presses, changes to the system (processor load, memory use, available disk space and so on), file operations on directories and specific files (open, close, delete, etc.), specific application events, entries made in event logs and even idle time.

The Automate Task Administrator program provides access to and management of all defined tasks; enables and disables triggers; sets up system configuration; examines the task-activity log; and creates new tasks.

Defining a new task can be done with or without the included wizard. The wizard leads you through naming the task, defining one or more triggers if any are needed (manually launched tasks don't require triggers) and then editing the task's script. The latter invokes the Automate Task Builder.

Automate Task Builder presents a window with three panes: the Available Actions pane, which provides a tree-structured view of all actions or operations that can be added to the task; a pane for the task script; and a pane for various debugging displays.

To build a task you select the actions you need and drag them to the script pane. Each action will raise a dialog as it is dropped so you can set the parameters for the action.

For example, for the FTP Download action you only need to set the target site, log in user and the directory and file to retrieve and save to.

For all actions you can set other parameters and error-handling action. The latter lets you ignore errors, take action for specific problems or abort the entire task.

More than 100 actions are defined in the Task Builder. These actions include Internet (FTP operations, HTTP download and post, POP3 retrieval and Simple Mail Transfer Protocol send), File (open, close and read), Network (send message and map drive), Database (SQL query and stored procedure) and Services Control (start, stop, pause, resume, install and remove).

GEARHEAD SCORECARD

Product: Automate 5

		Overall grade
Functionality	A	A
Elegance	A	
Value for money	A	

Vendor: Unisyn
www.unisyn.com

There also are specific actions for program flow including Variables (setting, modifying and deleting), Loop Actions (to examine windows, files and processes) and Flow Actions (if-else and end-if). There are even actions for manipulating the Windows registry, adding to the system log, executing DDE communications, performing text to speech and Basic Scripts.

Basic Scripts underlie the whole script system — the actions you drag to the script panel are code blocks. The version of Basic used is called AML and is similar to Microsoft Visual Basic for Applications. You also can toggle the script pane view to display the script as AML and edit it directly.

Coding AML lets you create, when needed, scripting that goes beyond what can be built using the action drag-and-drop interface alone. That said, what can be created without dirtying your hands with coding is awesome!

Tasks launched by triggers or by using the Automate Task Administrator are executed by what is, in effect, a runtime system running as a Win32 service interfaced to a "stub" executable that runs under the account of the user that launched the task (it shows up in the Windows system tray).

We have few criticisms of the product beyond some details that are missing from the documentation and lack of SNMP actions, and we'd like to see more-detailed error reporting.

We highly recommend Automate 5. It is a remarkable product, and Unisyn has plans to add more actions to improve Internet and network functionality. And for $350 for one copy, it is the best Automation product we've seen.

Your task? Write to gearhead@gibbs.com.

Cool Tools

Quick takes on high-tech toys
By Keith Shaw

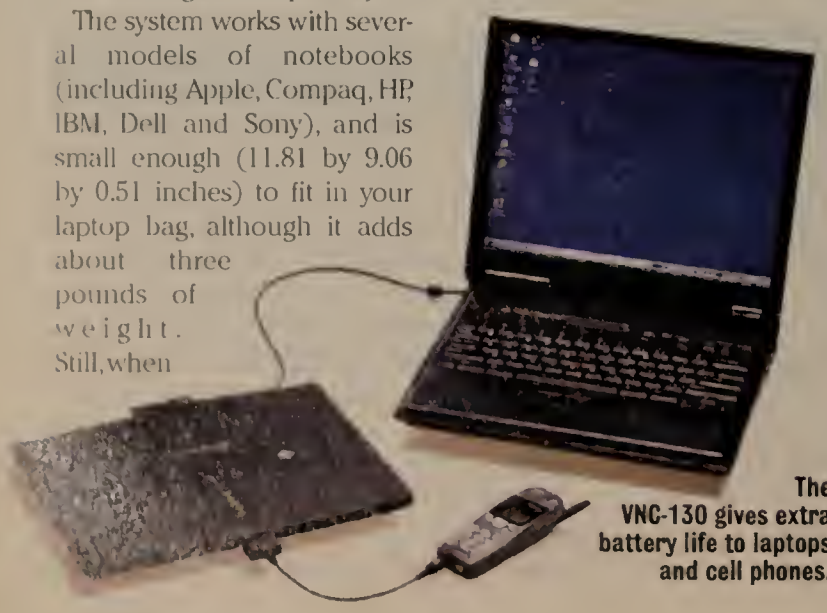
Cool battery, smart spam stopper

Here are two more products we've been testing recently:

N-Charge Power System

Devices that give your laptop extra power when you're traveling are nothing new, but having the same device recharge your handheld device and mobile phone at the same time is. Valence Technology (www.valence.com) sent us one of its N-Charge Power Systems (VNC-130), which gave us extra battery life for our notebook and could recharge our iPaq PDA at the same time (it also can recharge a cell phone).

The system works with several models of notebooks (including Apple, Compaq, HP, IBM, Dell and Sony), and is small enough (11.81 by 9.06 by 0.51 inches) to fit in your laptop bag, although it adds about three pounds of weight. Still, when you're on the road, it can be worth it to get the extra battery life, up to 10 hours, according to Valence.



The VNC-130 gives extra battery life to laptops and cell phones.

The setup is simple — just take the power adapter from your notebook to charge up the N-Charge device. Another cable lets you connect to the notebook so you can charge the N-Charge device and your notebook at the same time (charging in this case takes longer). After the N-Charge is charged, you now have an extra "battery" that can recharge your notebook and your handheld.

The VNC-130 costs $300 (Valence also has a $150 model that has less battery life).

Sunbelt Software's IHateSpam

When your e-mail address is as public as mine is (it's at the bottom of this column and all over our Web site), you get a lot of spam. But I also get legitimate e-mail that looks like spam, such as product pitches from public relations agencies and technology e-mail newsletters.

Blocking spam based on e-mail addresses doesn't work anymore; spammers just get a new e-mail address from a free service. I can't block entire domains (many public relations people use free e-mail services), and I can't allow only certain e-mail addresses, as public relations people change almost every week. I need a filter that can tell what e-mail is spam and what e-mail is legitimate.

The $20 IHateSpam software from Sunbelt Software (www.sunbeltsoftware.com) comes very close to this goal. It uses a scoring system that reads everything about the message — the sender, subject line and body of the e-mail — and gives it a score threshold. Scoring high on the threshold moves the message into a "quarantine" folder that sits underneath the Inbox folder in my Outlook client. It also sets up a list of "friends" and "enemies" that lets the user tell the software which e-mail addresses are good and which aren't.

IHateSpam does a good job of filtering out spam, and you can instruct it to be even smarter.

Initially, the software scans your "Sent Items" folder and adds those e-mail addresses to your "friends" list, the assumption being that if you reply to one of these, then it isn't spam. (If you responded to a spam message but didn't want additional messages, you can put the address on the "enemies" list.) After that, as new e-mail comes in, the software goes to work to determine if it's spam.

What's cool about this is the software's ability to learn. After it starts filtering, a user can tell the software whether e-mail is legitimate or whether it's spam. If the user says something is spam, the e-mail is sent to Sunbelt for human beings to analyze, so the software engine can be improved. This is similar to vendors that examine virus signatures.

While I was hoping for 100% accuracy right off the bat (I'm a dreamer), it's not the case. You do have to spend a few days telling the software what's good and what's not. Still, after four days on the system (including over a weekend, when we get most of our spam), the software had reached a point at which I wasn't seeing tons of spam in the in-box.

Sunbelt says a server version of the software is in the works, so stay tuned if you want to deploy to hundreds or thousands of end users.

Shaw can be reached at kshaw@nww.com.

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opinions!

EDITORIAL
John Dix

IP PBXs: Telling the players apart

At the first Network World Showdown at the Voice on the Net show last February we asked a panel of IP PBX vendors if IP telephony was ready for prime time. They assured us it was, although the debate that endued was littered with fundamental questions that exposed some raw spots.

We followed that up at the Fall VON last September with a showdown pitting three IP PBX vendors against three IP Centrex service providers. When we asked the audience to vote for the team that told the most compelling story, the crowd gave the win to the IP Centrex folks.

Now we're gearing up for Spring VON '03 and bringing the focus back to the IP PBX camp. Although this market is still young, it is mature enough that we no longer need to ask ourselves if the technology works. Instead, we're inviting some of the biggest vendors in the business to discuss what makes their products unique.

As the early technology debates fade, the IP PBX suppliers increasingly are turning their energies to differentiating their wares, touting everything from innovative station alternatives to management controls and security capabilities.

We'll talk about those and other differences, including call-center support, the simplicity of moving to unified messaging, and the manner in which new applications are developed.

That's not to say some core technology discussion won't creep in. Questions remain about single-number portability, support for remote nodes and even the manner in which vendors meet the requirements of the Americans with Disabilities Act. We'll sample these where appropriate.

We call on Alcatel, Avaya, Cisco, Mitel and Nortel to participate in this Network World Showdown, "IP PBXs: Telling the players apart," at Spring VON, from 5 to 6:30 p.m. March 31 at the San Jose Convention Center (to register, go to VON.com). They'll have until March 3 to confirm.

To refresh your memory on how these Showdowns work: In the first part of the session, yours truly and co-host, Mike Hommer, manager of consulting for Miercom, which is a member of the Network World Global Test Alliance, pose questions to the individual vendors. In the second third, Hommer and I play referee, letting the vendors question each other. And finally we open it up to members of the audience.

So plan to join the debate this spring, and in the mean time send along any questions you would like to see addressed.

— John Dix
Editor in chief
jdix@nww.com

Clue giving

Regarding Mark Gibbs' Backspin column "Christmas clue giving" (www.nwfusion.com, DocFinder: 4122): I would like to give a clue to everyone who has missed the basic problem with spam — that we pay for the infrastructure to enable our use of the Internet. Spammers do not compensate us for their use of our facilities and in effect are stealing service from us.

The root cause of this problem is that e-mail can be transmitted essentially for free. This concept is fine within a company or college campus, but not in the commercial world.

There is a similar problem in the world of direct telephone solicitation. The telemarketing flaks are taking advantage of one of the most important rules of debate: If you can control the definition of the terms, you are very likely to win the argument. They talk about "freedom of commercial speech," but they've sidestepped the main point: That we pay for the phone and the phone line, and they demand our time, without compensation, to answer their calls. I generally hang up on telemarketers right away. But if I'm feeling charitable, I tell them, "This phone is for my convenience, not yours. Do not call back," and hang up on them.

For the Internet to fully "grow up," there will have to be a charge for transmitting data, whether it be mail, video or data. It's just simple economics.

Steve Sacco
Maitland, Fla.

Dream tablet

Regarding Mark Gibbs' Backspin column about his desire to see a real tablet computer this year ("Dream tablet," DocFinder: 4123): There is just no way that a pen-centric computer will appeal to anyone with any facility using a keyboard, if there's any serious amount of input to be done.

The keyboard is the reigning champion for the human/computer-input interface. This is because text input is still the ruling paradigm for most tasks, and the keyboard is still the best way to make that happen.

Kurt Buff
Redmond, Wash.

Regarding Mark Gibbs' tablet PC design factor of "Instant on, instant off and instant reboot": I have been wondering for years why the PC manufacturers don't do something that was done when non-IBM style PCs first hit the market: have the operating system encoded to chips on the motherboard. Commodore, Timex-Sinclair and Tandy all had some, if not all, of the base operating system on chips. Bootup was relatively fast, considering the speed of the CPUs. With today's CPU/bus speeds, having at least the operating system kernel on flash chips on the motherboard would make the PC boot/reboot as if it had never been turned off; even faster to get back to a usable state than coming out of sleep/hibernate/suspend modes.

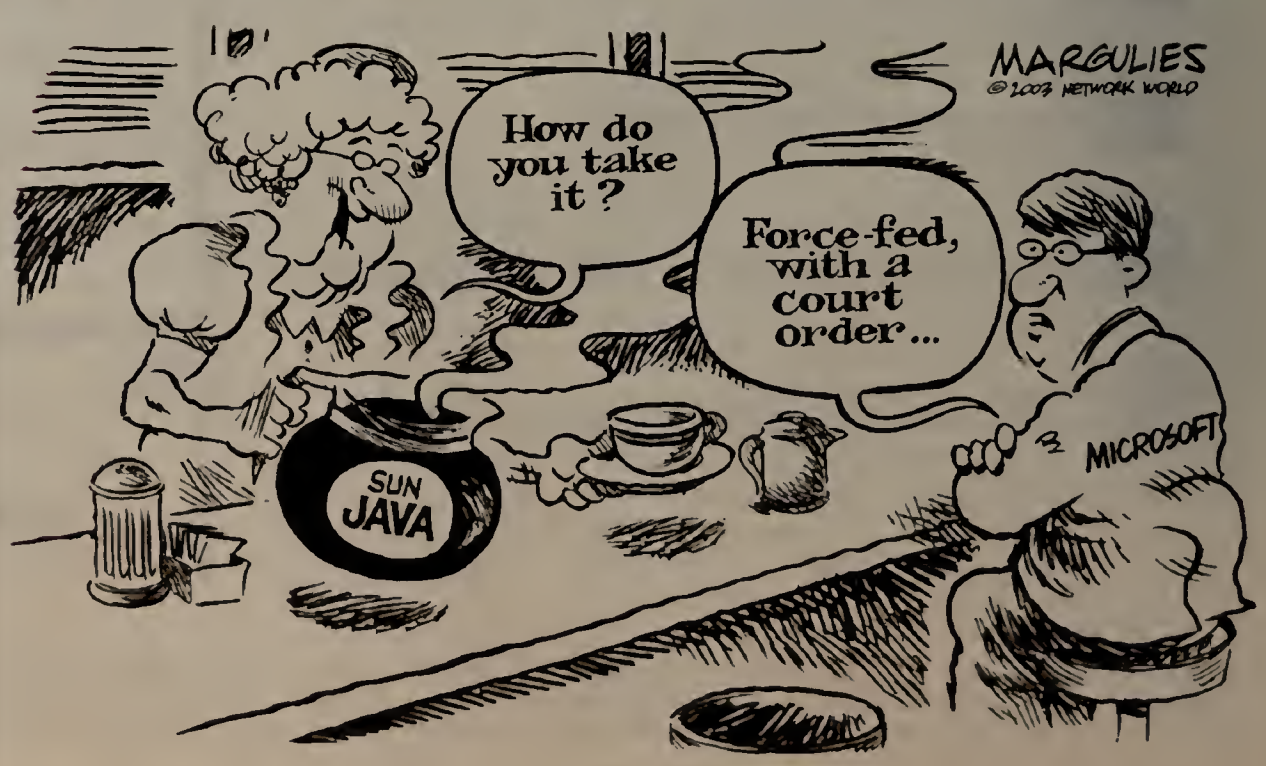
Upgrades could be written to the flash the same way BIOS is upgraded today, via a bootable floppy (a good reason for keeping the a: drive). With a little forethought concerning security of the operating system kernel, we could be assured of a virus-free bootup by interrupting the loading of infected applications. We could even clean an infected PC by wiping the RAM and then virus scan from the kernel operating system implementation.

This would require Microsoft to designate some portion of operating system code as minimum for PC operations. That might be the hardest thing to do.

Carl Atkins
Network analyst
Virginia Commonwealth University
Richmond, Va.

E-mail letters to jdix@nww.com or send them to John Dix, Editor In Chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.

More online! www.nwfusion.com Find out what readers are saying about these and other topics. **DocFinder: 4121**



ON THE ROAD

Chris Shipley

Mining value from tech events

NetworkWorld On the road with SEMINARS & EVENTS

Conventional wisdom says that in today's economic downturn, technology innovation is dead, or at least sleeping very soundly. Nothing could be further from the truth. While producing the annual Demo Conference, I spend the year talking to hundreds of executives, entrepreneurs, investors, inventors, IT customers and other industry seers. I read and watch, and in time I can knit the connective tissue among those conversations into a program that shines a light into dark places and brings clarity to a foggy future.

It's popular today to presume that there is no light and the fog won't lift, but from all those conversations I can tell you that innovation is alive and kicking in start-ups and established technology ventures.

Today, the process of selecting just 60 companies to introduce new products — companies that are doing truly innovative work, whose products and technologies reset the bar in their respective market places — is really difficult.

In corporations, new technology is focused on taming the infrastructure monster that was built during years of rich IT spending. At Demo 2003, Feb. 16-18 in Scottsdale, Ariz., we'll highlight new products that leverage IT assets, align IT development with business priorities and demonstrate that Web services are very real. We'll see security products that claim to be hackerproof. And we'll host an array of solutions to nagging IT issues, including spam blocking and management, knowledge management, and business communications and collaboration. (For more information on Demo 2003, go to www.nwfusion.com, DocFinder: 4128.)

New core technologies will show great progress in user interface, digital video and next-generation communication devices. And don't believe that technology has turned its back on the consumer market. Demo will serve as the launch venue for a half-dozen new consumer products.

These days, it's tough to afford a day away from the office, let alone the travel costs and registration fees that tally up at a three-day conference. And with the "booze and schmooze" reputation, it's even tougher to justify the expense to management. But if you are planning to buy technology in the next six months, you need to spend your technology budget carefully. If those dollars are better spent because you have made the investment in time and money looking at the technologies that would help you manage your business and networks more effectively, then the cost of attending an event such as Demo would be well-justified.

Shipley is executive producer of The Demo Conferences. She can be reached at chris@demo.com.

. . . if you are planning to buy technology in the next six months, you need to spend your technology budget carefully.

TELECOM CATALYST

Daniel Briere

Gadgets show IT's future

If you are reading this publication, chances are you love gadgets. Let's face it, we all love technology, and if we could do nothing but track the latest gadgets, we probably would.

Now more than ever though, there's a hidden message in gadget mania, and it has to do with your telephone company, its future offerings and your IT environment. Consumer-goods manufacturers are in a rush to network-enable everything under the sun. With that network-enablement comes a host of new services, gadgets and trends that will undoubtedly affect businesses.

With telecom innovation in a slump and pressure on service providers to deploy new revenue-generating services with a quick return on investment, there's not much new happening on the services front. New launches are being scaled back, and regulation again holds the key to whether it all gets jump-started again.

But the consumer space is booming. Nowhere is this more pronounced than at the Consumer Electronics Show (CES) held recently in Las Vegas. As experience with PDAs and other consumer goods has shown (note I called PDAs a consumer device), employees will adopt what they think will make them more efficient and life more fun, and leave it for IT managers to figure out later what to do.

So what happens when your employees can surf onto the corporate intranet from their TV set? At CES, Prismiq showed off a best-of-show $250 wireless-supported device for doing instant messaging and Web browsing on the TV, in addition to consumer favorites such as playing MP3s and videos — all via a link to your computer, which can be rooms away. Heard it before with WebTV? Sure, but it's getting better and better, and now with wireless links between computers (and the broadband connection) and the entertainment center, a whole new realm of revenue opportunities for service providers comes in.

How many times have people said, "No one wants to watch a movie on their computer?" A lot. Despite that, DVD drives for laptops are now almost standard issue. But getting that DVD to the TV has been constrained by a huge divide between the computing and entertainment domains in the home. With the advent of new standards such as the UPnP media server specifications, transport layers are in place for getting content off the PC and onto the TV.

But computer images look bad on TVs, you say. Yes they do, but you can get 42-inch wide-screen plasma TVs for less than $3,000. Even better, you can get a HDTV-ready, 43-inch, Digital Light Processing rear-projected display from Samsung for about $3,500. Those prices are dropping 50% or more per year.

So outside of loving gadgets and wanting a wide-screen TV, why care? Because these technologies are filtering into the business environment. Wide screens are all over trade-show booths and executive offices. The proliferation of 802.11x wireless standards has moved into unlikely places such as the car and beyond the home. And some products seemingly geared for the home would work great in the office. My favorite is the Siemens/Efficient Networks HomePlug-enabled SpeedStream modules that allow you to plug a $100 access point into the wall and hop onto your broadband connection via USB, Ethernet or HomePlug at the other end. Pretty darn cool, easy to install and the price is expected to drop substantially in the future.

We expect the newest round of 802.11g products from a variety of vendors to cost about the same as the present 802.11b products almost as soon as they come out, and the 802.11b products on the market are going to cost about half as much as they do today. What does that do for your network plans? Have some dead zones in your office? Just pick up another access point. With more products shipping with 802.11 onboard, it's inevitable that they will show up at work. And how are you going to put VPNs on those items? Better get cracking.

It's critical to stay on the forefront of all the things going on in the consumer arena. Go to a consumer show every once in a while, not just the telecom and IT shows. More and more, the power of the broadband-enabled home is going to show up in the office.

Briere is CEO of TeleChoice, a market strategy consultancy for the telecommunications industry. He can be reached at telecomcatalyst@telechoice.com.

More and more, the power of the broadband-enabled home is going to show up in the office.

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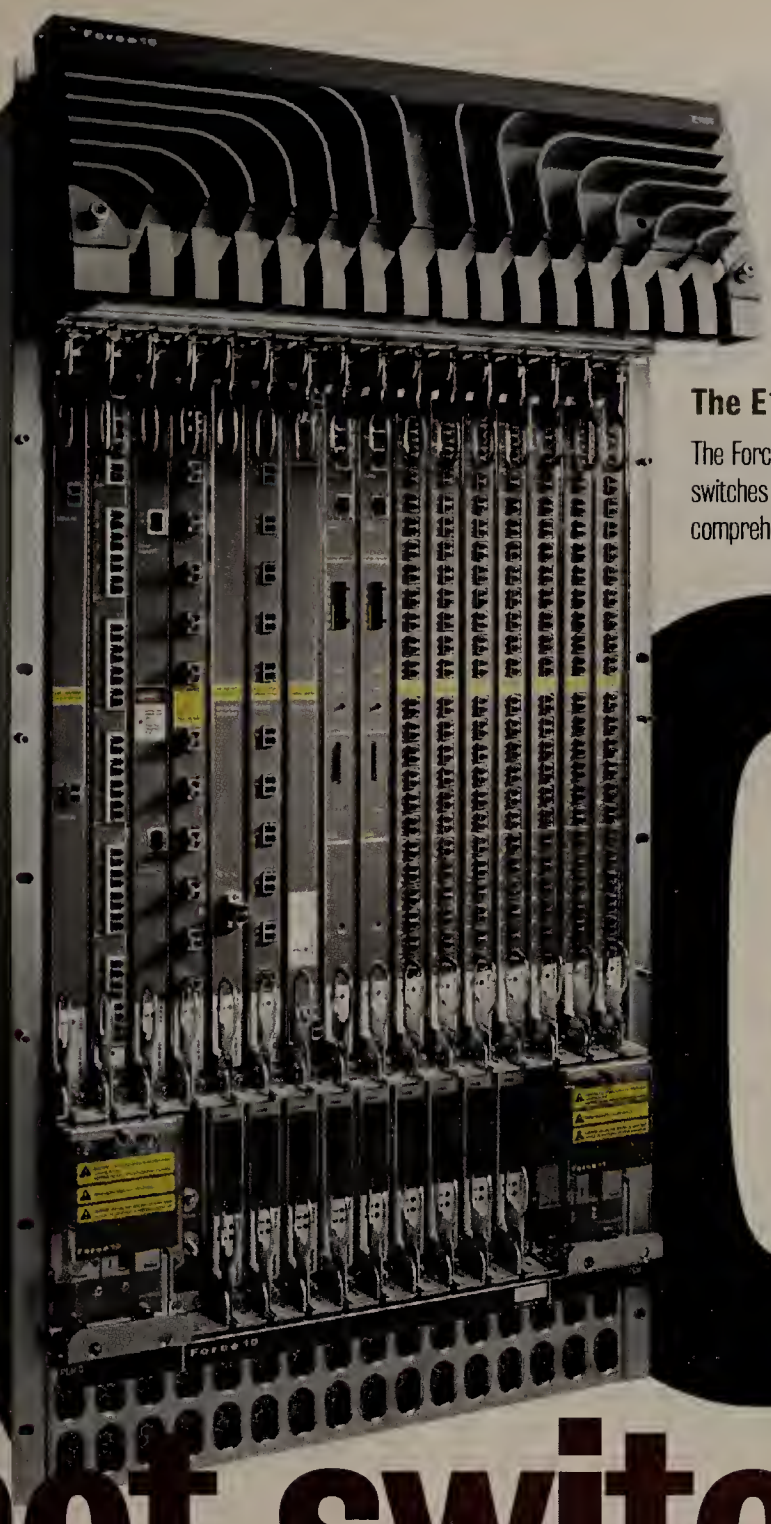


Testing 10 Gig Ethernet switches

The E1200 is one kickin' switch.

The Force10 E1200 was the only one of five enterprise-class Ethernet switches that could open the throttle to a full 10 gigs in our first-ever comprehensive performance test of these high-speed boxes.

Mixed results: Only Force10 delivers 10G bit/sec throughput, but all switches boast impressive features.

NetworkWorld HANDS-ON TEST

■ BY DAVID NEWMAN, NETWORK WORLD GLOBAL TEST ALLIANCE

Lab tests prove that most first-generation 10G Ethernet switches don't deliver anywhere close to 10 gigabits of throughput. But the latest backbone switches do deliver more bandwidth than earlier gear that used link aggregation, and they do a better job of quality-of-service enforcement.

In *Network World's* first hands-on assessment of the new 10G Ethernet switches, we put boxes from five major vendors through a comprehensive set of performance tests — both 1 and 10 Gigabit flavors of Ethernet. Avaya, Force10 Networks, Foundry Networks, HP and Nortel accepted our challenge. Other major players went missing, citing various reasons (see www.nwfusion.com, DocFinder: 4131).

Hardware gremlins plagued Nortel's devices, and we couldn't obtain valid results. For the remaining players, the results offer limited encouragement:

- Force10's E1200 delivers true 10G bit/sec throughput with any frame size, a performance that earned it the Network World Blue Ribbon award.
- Foundry's FastIron 400 and HP's ProCurve Routing Switch 9300m series (which HP buys from Foundry) achieved fast failover times.
- Avaya's Cajun P882 MultiService Switch kept jitter to a minimum and dropped no high-priority packets in our QoS tests.

But, when all is said and done, none of these first-generation devices represent the perfect switch. Force10's E1200 aced the throughput tests, but its delay and jitter numbers are far higher than they should be. As for the others, they won't really be true 10 Gigabit devices until they get capacity upgrades.

While the 10 Gigabit performance results are disappointing, it's important to put those numbers in context. Few, if any, users are planning pure 10G Ethernet networks, so these devices support a variety of interfaces and other features useful for enterprise core networking, such as support for highly redundant components and multiple device management methods (see full feature listing at DocFinder: 4126). It's important to note that these switches did a pretty good job of handling tasks not directly related

to 10G Ethernet, such as failover and QoS enforcement.

To the tests

We evaluated switch performance with four sets of tests: 10 Gigabit alone; Gigabit Ethernet across a 10G Ethernet backbone; failover times; and QoS enforcement.

The main goal of our pure 10G Ethernet tests was to describe the basic forwarding and delay characteristics of the new technology. Would it really go at 10 gigabits? And how much delay and jitter would the new interfaces incur at that speed?

To answer these questions, we set up a test bed comprising a single switch equipped with 10G Ethernet interfaces and SmartBits traffic generator/analyzers from Spirent Communications (see How we did it, page 44). All vendors supplied four 10G Ethernet interfaces for this event except Avaya, which supplied two.

We configured the SmartBits to offer traffic from more than 2,000 virtual hosts (more than 1,000 hosts in Avaya's case), representing the large number of devices attached to a typical 10 Gigabit switch.

We used three frame sizes: 64-byte frames, because they're the shortest allowed in Ethernet, and as such offer the most stressful test case; 256-byte frames, because they're close to the median frame length of around 300 bytes as observed on various Internet links; and 1,518 bytes, the maximum allowed in Ethernet and the size used in bulk data transfers.

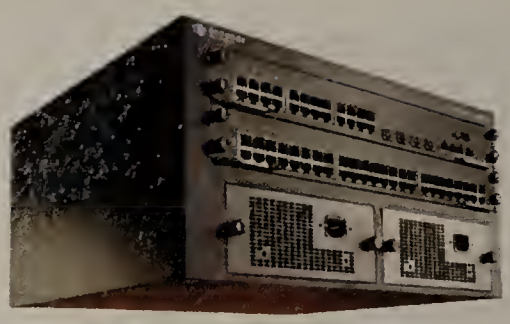
Only one switch — Force10's E1200 — actually delivered true line-rate throughput (see Figure 1, right). Impressively, the E1200 moved traffic at line rate with short, medium and long frames. In all our baseline tests, the E1200 did not drop a single frame.

Avaya, Foundry and HP boxes moved traffic at roughly 80% of line rate. Avaya and Foundry representatives on-site for testing said switch fabrics that topped out at 8G bit/sec limited their devices, and that's generally consistent with the frame rates these switches achieved.

In the best case, Foundry moved traffic at 86% of line rate when handling 64-byte frames, a result Foundry explained by saying its switch fabric actually has a bit more than 8G bit/sec of capacity.

Maybe so, but in tests with four interfaces Foundry's throughput with 256- and 1,518-byte frames was only about 5.5G and 5G bit/sec, respectively. Curiously, the HP switch achieved throughput close to 8G bit/sec per interface for all frame lengths, even though Foundry manufactures both vendors' switches. One possible explanation is that Foundry and HP supplied different software versions for testing. Given HP's higher throughput (and Foundry's, when tested with just two interfaces) some performance issue with the software image could explain the difference.

It should be noted that Avaya supplied two 10G Ethernet interfaces for testing, vs four from other vendors. Single-port-pair configurations are generally less stressful than the four-way full mesh we used to test other switches.



Throughput tests showed that Foundry's FastIron 400 topped out at 8G bit/sec because of the switch's fabric design, but the box still yielded very strong results in delay and jitter performance tests.

One other note is that there are small differences between theoretical maximum rates and the actual rates of Force10's E1200. This does not mean the E1200 dropped frames. The IEEE specification for 10G Ethernet lets rates vary by up to 3,000 frames per second because of clock skew; in our tests, the actual amount of slippage was far less.

Delay tactics

For some users, delay and jitter (delay variation) are even more important measures of a switch than its speed, especially when real-time applications are involved. In Gigabit Ethernet switches, delays typically are measured in the tens of microseconds. We expected a tenfold delay reduction with the 10 Gigabit devices, but that's not what we found.

Delay should be close to nil at 10 Gigabit rates. Consider a hypothetical perfect switch that adds no delay of its own. At 10 Gigabit rates, it would take just 67 nanosec to transmit a 64-byte frame and 1,230 nanosec to transmit a 1,518-byte frame. These numbers are far below the threshold at which the perceived performance of any application would be affected.

In the real world, delays are much higher (see Figure 2, right). With an offered load of 10%, where delay is the result of simple forwarding and no other effect such as queue buildup, we recorded average delay ranging from 4.3 microsec for Foundry's FastIron 400, with 64-byte frames to 46 microsec for Avaya's Cajun P882, with 1,518-byte frames. For the time-curious, 1 millisec is one-thousandth of a second; 1 microsec is one-thousandth of a millisec; and 1 nanosec is one-thousandth of a microsec.

While none of the delays are anywhere close to the point at which a single switch would affect application performance, there are two caveats to bear in mind. First, while it's true that the point at which applications suffer is in the milliseconds, it's also true that delay is cumulative. Thus, a network built with many switches could suffer from more delay overall.

Second, there's no good reason why a 10 Gigabit device should hang on to a frame for 30 to 50 microsec. For example, for Force10's E1200 to add 31.9 microsec when handling 64-byte frames; it had to buffer 46 frames at a time.

Force10 says the software it supplied for testing was optimized to produce the lowest delays under heavy loads. The vendor says its shipping software, Version 4.1.1, and a configuration change will reduce delay by up to 50%. We did not verify this claim.

The Foundry and HP boxes did the best job of keeping delay to a minimum. Even in the worst case — HP with 1,518-byte frames — average delay was only 7.6 microsec. That's not just a big improvement over the delay that Gigabit Ethernet boxes add; it's significantly lower than some other vendors' best delay numbers with 10G Ethernet interfaces at any frame length.

For voice-over-IP or video applications, jitter is even more critical a metric than delay. Our jitter measurements showed that switches with the least delay — from Foundry and HP — also recorded negligible amounts of jitter (see Figure 2, left). For both vendors, jitter was as low as 100 nanosec, the minimum our test instruments could record.

To its credit, Ayava's Cajun P882 also kept jitter down in the hundreds of nanoseconds, at least four orders of magnitude below the point at which application performance would suffer.

Force10's jitter numbers were higher than the others and generally represented about 25% of the average delay. This means switch delay could swing up or down by 25% over time, and that's a relatively big variation. While the amounts involved aren't enough to degrade application performance by themselves, the earlier caveat about delay being cumulative holds: A network built with many Force10 switches could add significant jitter.

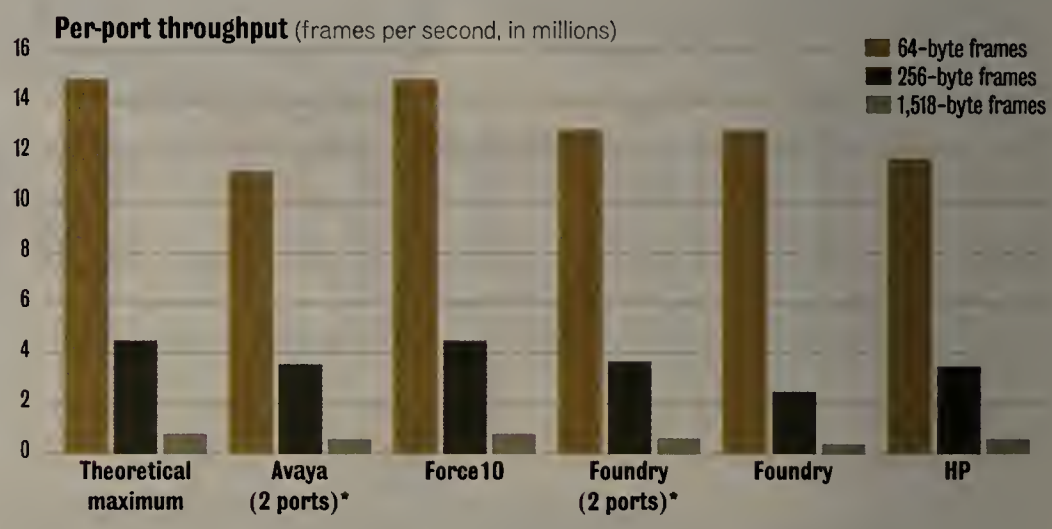
Backbone builders

While 10 Gigabit baseline tests give us a good idea of how the technology stacks up inside these switches, few if any network designers envision pure 10G Ethernet networks anytime soon. We also tested 10G Ethernet the way it's more likely to be used: as an aggregation technology for multiple Gigabit Ethernet connections.

For the bandwidth-aggregation tests, we constructed a test bed comprising two chassis connected with a 10G Ethernet link. We also equipped each chassis with 10G (single) Ethernet interfaces, and offered traffic across the 10 Gigabit backbone. With 510 virtual hosts offering traffic to each of the Gigabit Ethernet interfaces, there were 10,200 hosts exchanging traffic

Figure 1: 10G Ethernet throughput

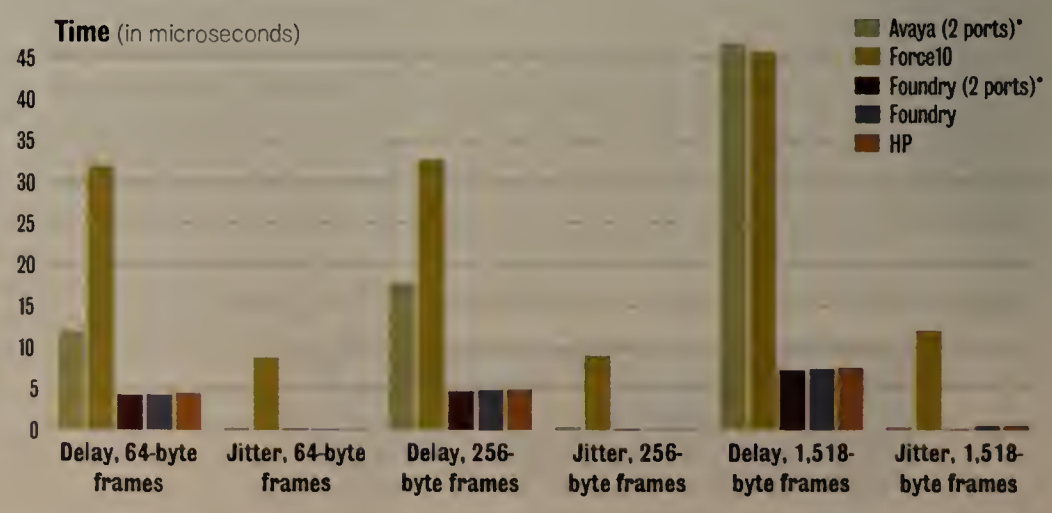
Only Force10's E1200 achieved line-rate throughput at 10G bit/sec rates. Switches from Avaya, Foundry and HP topped out at 8G bit/sec or less because of switch-fabric bottlenecks.



*Tested with 2 ports; all others tested with 4 ports.

Figure 2: 10G Ethernet delay and jitter

Force10's E1200 might have had the highest throughput, but its delay and jitter results were also remarkably high, a problem the vendor attributes to software optimization issues. Avaya's Cajun P882 kept jitter low (albeit with two ports, vs. four for other vendors), while Foundry and HP posted relatively low delay and jitter results.



*Tested with 2 ports; all others tested with 4 ports.

Note: The results occured when we offered a 10% load. Smaller numbers are better.

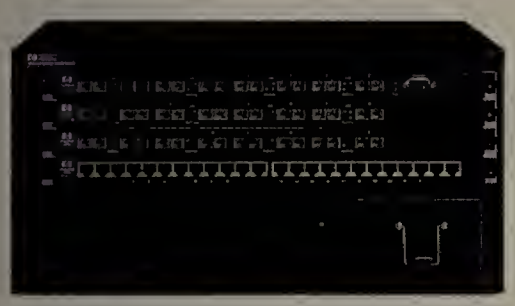
— just the sort of thing one might find at the core of many large corporate networks.

It's no coincidence this test bed is similar in design to the one we used in a previous evaluation of link aggregation (see DocFinder: 4025). A primary goal of this test was to determine if 10G Ethernet backbones offer any improvement over previous tests using link aggregation, where high frame loss and latency rule.

We again used the Spirent SmartBits to offer 64-, 256- and 1,518-byte frames to determine throughput, delay and jitter. In this case, we used a partial-mesh traffic pattern, meaning 10 interfaces on one chassis exchanged traffic with the 10 other interfaces across the 10 Gigabit backbone, and vice versa.

Force10's E1200 switch again led the pack, delivering line-rate throughput at all three frame lengths (see Figure 3, page 44). The vendor's aggregate throughput approached 30 million frames per second across two chassis with zero frame loss.

Foundry's and HP's results came in right up against the 8G bit/sec limit of their switch fabrics. Foundry's results with 256- and 1,518-byte frames were significantly better than in the four-port 10G Ethernet baseline tests.



HP buys the technology for its ProCurve Routing Switch 9300m series from Foundry. Results for this switch greatly resembled the results Foundry's box achieved.

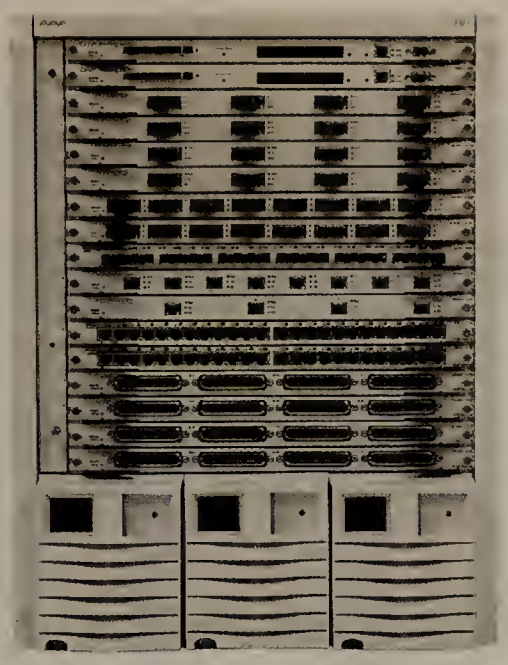
Avaya's Cajun trailed the pack, with throughput of less than 5G bit/sec in every test. Avaya attributes this to the Cajun's crossbar design, which becomes congested when utilization exceeds about 60% of its capacity. In this case, 60% of an 8G bit/sec switch fabric represents just about the levels we saw.

The good news for all vendors is that throughput over a 10 Gigabit backbone is significantly higher than the numbers we obtained in a previous test using link aggregation. In the worst case, we saw throughput tumble to just 10% of line rate with link aggregation; here, even the worst-case number was nearly five times lower. Clearly, it's better to use a single physical pipe than a virtual one.

Less waiting

Going with 10G Ethernet backbone instead of link aggregation also offers benefits when it comes to delay and jitter. In previous tests, we saw delay jump by as much as 1,200% when we used link aggregation. In this year's test, we saw only modest increases in delay and jitter compared with the pure 10 Gigabit numbers.

Switches from Foundry and HP did the best job of keeping average delay and jitter to low levels across all frame lengths (see Figure 4, page 44). At worst, Foundry's FastIron added average delay of 32.3 microsec with 1,518-byte frames, far below the point at which applications would suffer. And while the FastIron's delay is higher than the 7.6 microsec we recorded in the pure 10 Gigabit tests, remember that frames had to cross two chassis and two pairs of interfaces in this configuration, vs. just one chassis and pair of interfaces.



While Avaya's P882 did not fare well in our pure throughput tests, this switch kept jitter to a minimum and performed well in our QoS tests.

Delay and jitter were higher in this test with the Avaya and Force10 switches — much higher in Force10's case. In the worst cases, Force10's E1200 delayed 1,518-byte frames an average of 90.9 microsec, and delay for 1,518-byte frames going through Avaya's Cajun varied by an average of 16.4 microsec. By themselves, these numbers are no cause for concern; they're in the same ballpark as some Gigabit Ethernet switches, and Gigabit Ethernet was the gating factor in this configuration. Still, the Foundry and HP results show it is possible to achieve lower delay and jitter.

Fast failover

For many users, resiliency is an even more important consideration than throughput, jitter or delay. We assessed the switches' ability to recover from a link failure by measuring how long it took to reroute traffic onto a secondary link.

In this test, we connected two switch chassis with two 10G Ethernet links and asked vendors to configure Open Shortest Path First so that one link was designated as primary and the other as secondary. Then we offered traffic to a Gigabit Ethernet interface on one chassis and verified it was carried over the primary link to the other chassis. Once we verified traffic was being forwarded, we physically disconnected the primary link between chassis. This forced the switches to reroute traffic onto the secondary link. It takes some amount of time to make the change, and during the cutover some frames inevitably will be dropped. We derived the failover time from the number of frames lost.

Force10 supplied enough 10G Ethernet interfaces for us to repeat this test with two pairs of backbone links connected using 802.3ad link aggregation. Avaya couldn't participate in this event because it did not supply the four 10G Ethernet line cards needed for a single-link failover test. We tested the other vendors by failing over a single backbone link.

Force10's performance in our failover tests was another area of big improvement over previous assessments in link aggregation. The other vendors didn't supply enough 10G Ethernet interfaces to try link aggregation, but their failover results were still impressive.

In previous tests, failover times increased by a factor of 10 when link aggregation was in use. Not so with Force10's E1200 (see complete failover results at DocFinder: 4127). In this test, cutover time improved when Force10 enabled link aggregation, going from 474 millisec without link aggregation to 384 millisec with it.

Neither Foundry nor HP supplied enough 10G Ethernet interfaces to try link aggregation, but both vendors' boxes failed over even faster than Force10's switch — 237 millisec for Foundry and 313 millisec for HP.

QoS enforcement

When it comes to enforcing QoS parameters for different traffic classes at 10 Gigabit rates, no vendor delivered everything we requested. Here again, though, our results were far better than previous tests using link aggregation.

We used the same SmartBits script from the previous link aggregation test. We offered three different traffic classes and expected the switches to do four things.

First, switches should have marked traffic using Differentiated Services code points. Remarking frames is a good security practice; without it, users might mark all their traffic as high priority.

Second, we expected switches to deliver high-priority traffic without loss, even with congestion present.

Third, we asked vendors to configure the switches so that low-priority traffic would never consume more than 2G bit/sec of available bandwidth. This rate-controlling feature is critical for controlling low-priority flows such as streaming media feeds.

Finally, we expected switches to allocate

Net Results

4.0 RATING
Force10 E1200
Company: Force10 Networks, www.force10networks.com **Price:** $125,000. **Pros:** Only device with line-rate throughput. **Con:** High delay and jitter.

3.8 RATING
FastIron 400
Company: Foundry Networks, www.foundrynet.com **Price:** $94,310. **Pro:** Low delay and jitter. **Con:** 8G bit/sec fabric limits throughput.

3.8 RATING
ProCurve Routing Switch 9300m series
Company: HP, www.hp.com/rnd/index.htm **Price:** $115,804. **Pro:** Low delay and jitter. **Con:** 8G bit/sec fabric limits throughput.

3.2 RATING
Cajun P882 MultiService Switch
Company: Avaya, www.avaya.com **Price:** $85,320. **Pro:** Jitter is nice and low . . . **Con:** . . . but so is throughput.

Not rated
Passport 8600
Company: Nortel, www.nortel.com **Price:** $102,480. **Pro:** Wide array of software and hardware options. **Con:** Hardware problems led to invalid test results.

What's the score?

BLUE RIBBON WINNER

	Force10	Foundry	HP	Avaya
10G Ethernet performance 25%	4	4	4	2.5
Gigabit Ethernet perfomance with 10 Gigabit backbone 25%	4	4	4	2.5
QoS enforcement 25%	4	2.5	2.5	3.5
Failover 15%	4	5	5	N/A
Features 10%	4	4	4	4
TOTAL SCORE	4.0	3.8	3.8	3.2

Individual category scores are based on a scale of 1 to 5. **Percentages** are the weight given each category in determining the total score. ■ **Scoring Key: 5:** Exceptional showing in this category. Defines the standard of excellence. **4:** Very good showing. Although there may be room for improvement, this product was much better than the average. **3:** Average showing in this category. Product was neither especially good nor exceptionally bad. **2:** Below average. Lacked some features or lower performance than other products or than expected. **1:** Consistently subpar, or lacking features being reviewed.

Figure 3: Gigabit Ethernet throughput over a 10G Ethernet backbone

In tests of 20 Gigabit Ethernet interfaces exchanging traffic in partial mesh pattern across a 10G Ethernet backbone, Force10's E1200 again achieved line-rate throughput. As in the pure 10G Ethernet tests, the other vendors were hamstrung by the 8G bit/sec capacity of their devices' switch fabrics.

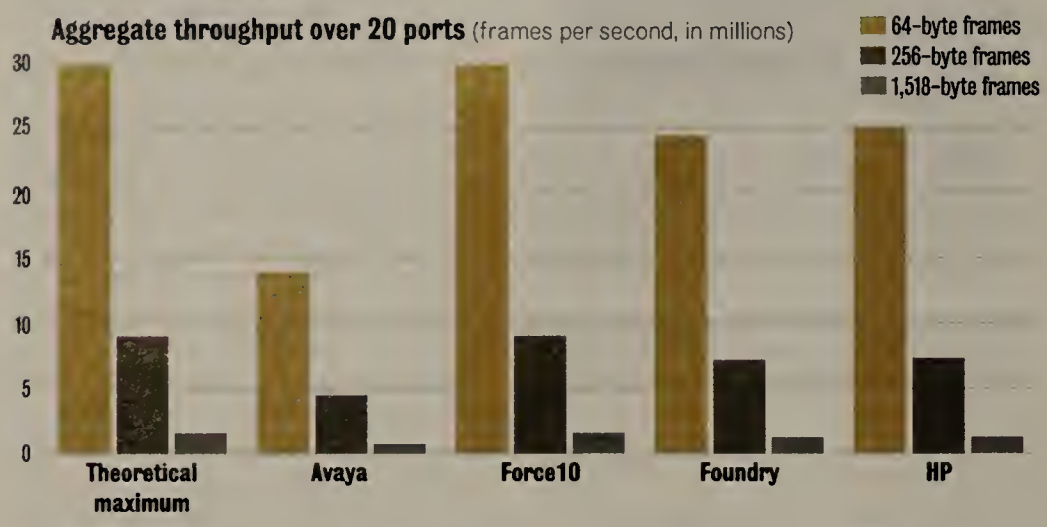
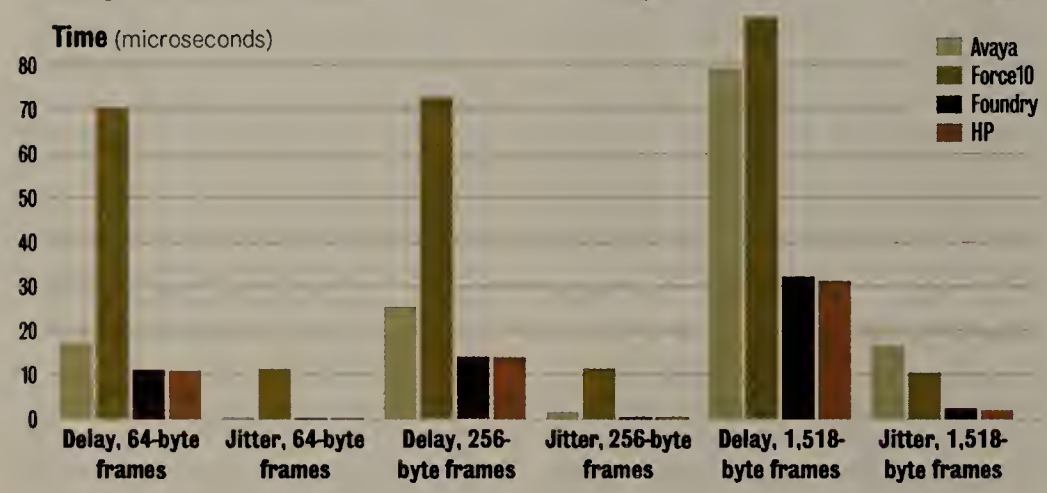


Figure 4: Gigabit Ethernet average delay and jitter

Delay and jitter were higher in the backbone tests, an expected result given two chassis and two interface types were involved. Even so, Force10's delay and jitter numbers (and Avaya's delay with large frames) were relatively high.



Note: The results occurred when we offered a 10% load. Smaller numbers are better.

remaining bandwidth to medium-priority traffic. Given our configuration it was possible to forward all medium-priority traffic without loss, but not all switches actually did so.

Deciding which switch did the best job depends on which of these four rules is most important (see graphic at DocFinder: 4130). If never dropping a high-priority frame is the most important criterion, then Avaya's Cajun came out on top.

Then again, if coming closest to meeting the rules for all traffic classes matters most, then Force10's E1200 wins this event. Though it did drop small amounts of high-priority traffic, the E1200 did the best job of the desired rates for all three traffic classes.

Results for Foundry and HP were a bit puzzling. While both vendors' switches did a reasonable job in handling high- and medium-priority traffic, they were far too severe in rate-controlling low-priority traffic. Engineers from both companies said the switches cannot rate-limit one class while simultaneously enforcing drop preferences for other classes.

The good news for all vendors is that QoS enforcement across a 10 Gigabit backbone generally works better than it does across an aggregated link consisting of multiple Gigabit Ethernet links. Last time, we saw vendors drop significant amounts of high-priority traffic and got the ratios all wrong between traffic classes.

It would be a stretch to say the first generation of 10G Ethernet products turned in excellent results. For most switches, 8G and not 10G bit/sec seems to be the limit. Where line-rate throughput is possible, the cost is relatively high delay and jitter. But for whatever problems we found, the new 10 Gigabit switches offer one very convincing advantage over previous generations: They get beyond the gigabit barrier far better than the alternative, link aggregation.

Newman is president of Network Test in Westlake Village, Calif., an independent benchmarking and network design consultancy. He can be reached at dnewman @networktest.com.

We gratefully acknowledge the support of Spirent Communications in staging this project. Spirent supplied test software and gear, and engineering and logistical support. Special recognition goes to Spirent's Bob Anderson, Brooks Hickman and Jerry Perser.

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How we did it

We asked vendors to supply two switch chassis, up to four 10G Ethernet interfaces, and a total of 24 Gigabit Ethernet interfaces. We assessed device performance in terms of pure 10G bit/sec throughput, delay and jitter; 1G bit/sec throughput, delay and jitter across a 10 Gigabit backbone; failover times; and quality-of-service enforcement.

Our primary test instrument was the SmartBits performance analysis system from Spirent Communications, equipped with XLW-3720A TeraMetrics 10G Ethernet cards and LAN-3311 TeraMetrics Gigabit Ethernet cards.

For the 10G Ethernet and backbone tests, the test traffic consisted of 64-, 256-, and 1,518-byte Ethernet frames. The duration for all tests was 60 seconds, and the time stamp resolution of the SmartBits was plus or minus 100 nanosec.

In the 10G Ethernet tests, we asked vendors to assign a different IP subnet to each of four 10G interfaces in one chassis. We configured the SmartBits to offer traffic from 510 virtual hosts per interface in a fully meshed pattern (meaning traffic was destined for all other interfaces). We measured throughput, average delay at 10% load and jitter.

For the backbone tests, we asked vendors to set up two chassis, each equipped with one 10G Ethernet interface and 10 edge interfaces using Gigabit Ethernet. Here again, we asked vendors to assign a different IP subnet to each edge interface and we configured the SmartBits to offer traffic from 510 virtual hosts per interface. This time, we offered traffic in a partially meshed multiple-device pattern; as defined in RFC 2889, that means the traffic we offered to one chassis was destined to all interfaces on the other chassis and vice versa. Once again, the metrics were throughput, average delay at 10% load and jitter.

In the failover tests, we set up two chassis, each equipped with one Gigabit Ethernet and two 10G Ethernet interfaces. We asked vendors to configure Open Shortest Path First metrics to that one 10G Ethernet interface, which would act as a primary route, and one would function as a secondary. We offered 64-byte frames to one Gigabit Ethernet interface at a rate of 100,000 frames per second; thus, we transmitted one frame every 10 microsec. Approximately 10 seconds into the test, we physically disconnected the primary link, forcing the switch to reroute traffic onto the secondary path. We derived failover time from frame loss.

In the QoS enforcement tests, we set up two chassis, each equipped with 12 Gigabit Ethernet interfaces and one 10G Ethernet backbone interface. Because we offered all 24 edge interfaces 128-byte frames at line rate in a partially meshed pattern, we congested the switches by a 12-to-10 ratio. For this test we offered three classes of traffic in a 1-to-7-to-4 ratio.

We asked vendors to enforce four conditions. First, they would have to mark incoming frames using specified Differentiated Services code points, something we verified by capturing and decoding traffic. Second, of the three traffic classes we offered, the switches should have delivered all high-priority traffic without loss. Third, the switches should have limited the rate of low-priority traffic so that it would not consume more than 2G bit/sec of backbone capacity. Finally, the switches should have allocated any remaining bandwidth to medium-priority traffic.

As a check against allocating a fixed amount of bandwidth to high-priority traffic, we reran the tests with only medium- and low-priority traffic present in a 9-to-3 ratio. Vendors were not allowed to reconfigure devices between the first and second tests, and we expected the switches to allocate bandwidth previously used by high-priority traffic to the other classes.

A more detailed version of the test methodology is available at www.nwfusion.com, DocFinder: 4125.

NetworkWorld Review

Vocera Communication System

Boldly talking over the wireless LAN

■ BY TOM HENDERSON, NETWORK WORLD GLOBAL TEST ALLIANCE

In "Star Trek: The Next Generation," characters in the 24th century communicated by tapping a badge and speaking ("Picard to Engineering"). Magically, the badge would contact the person no matter where they were on the ship. Here in the 21st century, Vocera has introduced a wireless LAN-based interactive voice response system that uses lightweight badges similar to the "Star Trek" system.

The Vocera Badge connects via an installed wireless LAN to a Vocera server and is operated largely by voice command. (As an option, you also can connect to analog phone lines by connecting Vocera to a PBX, Centrex or other system.) With a bit of work, these no-hands communicators can become very useful where wireless LANs based on 802.11b deployments are working.

Vocera doesn't control the most critical component of the system — the 802.11b infrastructure. We found that if a wireless LAN can be "killed" or has "bare-spot reception," so can Vocera. But when configured correctly, Vocera can operate during very high wireless LAN network loads without losing quality or functionality. It won't replace a PBX or your business phone system, but this can augment and "cut the cables" for mobile employees. Companies that use walkie-talkies might find the Vocera system sleeker, more feature-filled and less cumbersome.

The system

Vocera shipped us a preconfigured Dell 4500 server with Windows 2000 Advanced Server installed. Normally we prefer testing the components that end users/deployment personnel would use, but Vocera ships 100% of its server systems through value-added resellers, which are required to deploy a ready-to-run/configured system. So we let Vocera ship its server almost completely configured. However, some work on the server was required (see How we did it, page 46).

The Vocera server includes a base platform (the Dell 4500 in our case), Win 2000 Advanced Server (Win 2000 Professional can be used and we recommend that), Vocera software, Nuance voice-recognition software and an optional multiport Intel/Dialogic phone board. The total Vocera software installation took about 10 minutes.

The badges (we received four) are based on 802.11b (other 802.11 variants are not available) and initially are programmed via a configuration download through an access point. The access point requires a specific IP address (in a specific range) to download the configuration. Installation is more difficult than it needs to be. Whether the choice is static or dynamic IP address, each badge must have an initial wireless LAN adaptation setup procedure. This ritual is oddly cumbersome as all configuration must come from the wireless LAN — there is no equivalent to a cell phone "base station-to-PC" connection for initial configuration.

After some additional minor glitches, we configured the badges and set up the group/user database. Vocera cannot read an Active Directory or otherwise use Lightweight Directory Access Protocol or another directory service to import user or group information into its database. Vocera uses the MySQL database and Apache/Tomcat Web server (which requires shutting down or moving Internet Information Server's Web service ports if they were installed).

A genie in the badge

Next was configuring how the voice recognition (humanized in voice responses through the badge) would sound. Male or female voices are offered — we chose the male voice, but in retrospect the female voice was easier to understand.

The Genie application is analogous to an older voice-recognition-driven application called the Wildfire Assistant from Wildfire Communications. When we used a badge for the first time, we pressed the call button on the badge, and the male voice asked for our name. We spoke our name, and the badge repeated the name back to us — when we responded, the badge became registered to us.

Pressing the call button let us locate individuals (and groups) and bring them into the conversation. Controls on the side of the badge are used to check messages that can be stored during off-time, although Vocera is not a standard voice mail server. There is a Do Not Disturb mode that users can select — voice mail also kicks in when users are out of range or offline.

The optional voice board, a Dialogic D120JCT-LS 12-port board, was connected to two analog trunks (the system can support two Dialogic boards for a total of 24 concurrent ports). We successfully used Vocera to dial internal and outside extensions. Unfortunately, the software doesn't recognize a command such as "Call George" and numbers need to be spoken. Vocera does remember dialing prefixes for outside lines and long-distance prefixes.

Testing the badges

We used several tests to discern the voice-recognition quality of the Vocera/Nuance combination. High ambient background noise (such as 82db/A average from equipment cooling fans in our network operations center) made voice recognition difficult; we were forced to repeat our selections several times before they were recognized. In low background-noise areas (ambient noise under 72db/A average), recognition was nearly flawless.

When the badge hangs from a lanyard that is worn around the neck, the speaker faces away from the user. Additionally, the microphone embedded in the badge picks up lots of ambient sounds around the user. Using the earphone/microphone combination in conjunction with the badge helped the system recognize voice immensely and also kept privacy high. Without this earphone/microphone combination, communications via a badge are fairly public.

We also subjected the system to a variety of background Ethernet and wireless LAN data traffic to see how it affected communications. On a quiet network, Vocera subjects conversations to about a 1-second delay between speaker and listener. We subjected all our access points to a large amount of traffic using either a 4G-byte FTP

Net Results

Vocera Communications System 1.02

3.7 RATING

Company: Vocera, (800) 331-6356, www.vocera.com **Cost:** Minimum configuration is 75-user system with 25 badges and PBX integration for approximately $40,000. $350 per badge (includes batteries, attachments). User licenses available in preconfigured sets of 75, 150, 300, 450, 600 users and up. **Pros:** High-fidelity wireless LAN voice features, using WEP; addictive convenience. **Cons:** Weird installation/setup; phone badge buttons difficult to use; doesn't use directory services at all.

What's the score?	Vocera
Features 40%	4
Management/administration 20%	4
Ease of use 20%	4
Installation 10%	3
Documentation 10%	2
TOTAL SCORE	3.7

Individual category scores are based on a scale of 1 to 5. **Percentages** are the weight given each category in determining the total score. ■ **Scoring Key: 5:** Exceptional showing in this category. Defines the standard of excellence. **4:** Very good showing. Although there may be room for improvement, this product was much better than the average. **3:** Average showing in this category. Product was neither especially good nor exceptionally bad. **2:** Below average. Lacked some features or lower performance than other products or than expected. **1:** Consistently subpar, or lacking features being reviewed.

file transfer or with our Spirent Communications traffic generator, and could cause outages only when traffic rose to denial-of-service levels — effectively jamming all the access points in our wireless LAN.

Vocera supports up to 128-bit Wired Equivalent Privacy encryption, and we couldn't tell that WEP affected traffic, throughput or signal quality. The badges worked at the same range as an 802.11b-equipped notebook. Similarly, signal dead zones stopped our badges from working in the same way a notebook would stop working. Voice latency was approximately 1 second, and we could adapt to this slight hesitation quickly.

Conclusion

The Vocera 1.02 offering has a "one-dot-zero" feel to it. Offsetting the product's youth is a serious "wow" factor. While we couldn't test a large density of badges under stressful circumstances, the basic Vocera technology could survive the stresses of modern business — as long as the underlying wireless LAN transport is stable. The youthfulness and buggy-ness might be best described as Vocera's Captain Kirk stage.

Henderson is principal researcher for ExtremeLabs of Indianapolis. He can be reached at thenderson@extremelabs.com.

How we did it

We tested the Vocera system as supplied by Vocera. The kit included four badges (with lanyards, headsets, belt clips and chargers), a Dell 4500 server (Windows 2000 Server) using a 2-GHz Intel processor, and a 40G-byte hard disk with internal IEEE 100Base-TX network card.

However, while the server software was installed with Vocera components, the server (running under Windows 2000 Advanced Server) arrived without any service packs or security updates.

After platform stabilization we added users, groups and access point location aliases, which became objects of identification that Vocera used to locate for conversations. Additional user setup can enable comparatively sophisticated "follow-me" call-forwarding features.

Two test beds were used: a pristine, isolated network and the lab network. The pristine network consisted of five 802.11b access points (one from Proxim/Orinoco, two from D-Link, one from Intel and one from Linksys) in a nonoverlapping configuration (to reduce the effects of co-channel interference). We then connected this network to the lab infrastructure and two phone trunk lines.

We walked along our property doing a Verizon-style test ("Can you hear me now?") through an acre one-floor range. We noticed service outages (Vocera has a signal strength indicator that we verified with a notebook running an Proxim/Orinoco 802.11b card) that occurred where wireless LAN drop-off normally occurred.

We repeated the test while running batch FTP transfers designed to clog all the access points. On a few occasions we noticed conversational dropouts, but never increased time lag. When we used a Spirent traffic generator to clog the 100Base-TX segment connected to the Vocera server, we had uniform conversational drop-offs when at 94% utilization; badge units reconnected without user intervention.

Management

Strategies

- CAREER DEVELOPMENT
- PROJECT MANAGEMENT
- BUSINESS JUSTIFICATION

VPN outsourcing

Firms are using managed services to circumvent the staffing burden of maintaining VPNs.

■ BY DENISE PAPPALARDO

For most companies, moving to an IP-based VPN to enjoy savings and flexibility is an easy decision. But it's not a cinch to manage a secure network. VPN deployment, monitoring and maintenance can be complex chores that strain IT departments.

At first, most network executives attempt to manage their VPNs in-house. But more are looking for help from third-party experts. According to a recent study from IDC, 75% of 400 WAN managers surveyed said they manage VPNs in-house. Still, 12% of respondents completely outsource their VPNs, while 11% jointly manage their VPN along with a third party.

Some companies that have made the outsourcing plunge are keeping the size of their IT departments in check and are better utilizing their workers' skills.

Before switching to a fully managed VPN with WorldCom in 2000, Toyota Motor Sales, USA used a legacy 19.2K bit/sec dial-up network to connect AS/400 systems at dealer sites to a mainframe at the data center in Torrance, Calif.

Although the system worked, it was antiquated, says Bill Strickland, national technology manager for IS LAN/WAN services at Toyota. After the company decided to use more Web applications, Toyota chose an outsourced VPN primarily because it was more cost-effective and better suited for the future.

"We have a group of 1,100 Toyota and Lexus dealers that communicate with the factory to order cars, parts, do warranty claims and vehicle financing," he says.

The old dial-up network required only one person to support it, but Strickland estimates he would need between eight and 10 full-time network engineers to support a VPN in-house. "This type of network environment requires more care because people in car dealerships don't really know all about IP or the impact of a circuit going to Toyota," he says.

Toyota hired four people to manage the outsourced relationship, but those employees primarily address dealer issues with accessing the manufacturer's portal site or basic connectivity questions. While devoting four engineers to manage an outsourced relationship might seem excessive, Strickland says he took this "high-touch" approach because the dealers who access the VPN are typically not IT-savvy.

Another reason he put the four engineers on the job is because it's in Toyota's best interest from a customer service perspective. "If a dealer can't order parts for your Camry because the VPN is down, then you're an unhappy Toyota customer," he says.

The additional staff needed to support the VPN internally would have cost significantly more than outsourcing, Strickland says. Network administrators earn between $45,500 and $65,750 per year, according to IT staffing firm Robert Half Technology, while VPN or network security administrators typically command between $62,500 and $88,250. Based on these figures, Toyota is saving at least $182,000 to $273,000 per year by not hiring four to six more network engineers to manage the VPN.

Instead, Toyota was able to add four Web application developers for the IS department. This has helped grow the portal site, which hosts 125 applications and is a critical means of communication between Toyota and its dealers, Strickland says. ■

SUSAN WERNER

"If a dealer can't order parts for your Camry because the VPN is down, then you're an unhappy Toyota customer,"

Bill Strickland
National technology manager for IS LAN/WAN services, Toyota Motor Sales, USA

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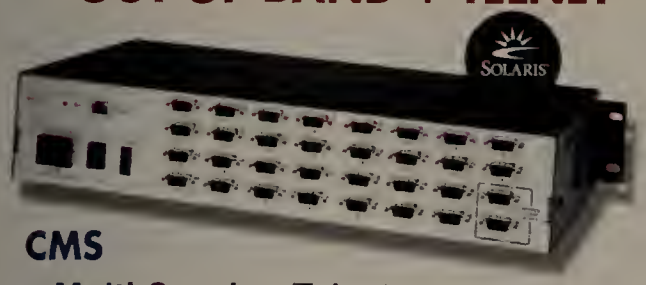

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- Internal 33.6 Kbps Modem
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- Co-Location Password Features

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APS

- 4, 8 or 16 Port Models
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- Safe "Break" Features
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WTI's family of remote site management products allows network administrators to manage network elements located anywhere. WTI designs and manufactures in-band and out-of-band console and terminal switches, remote reboot and power management solutions, rack mounted modems and automated A/B Fallback Switches.

■ Features included in all Console Switches

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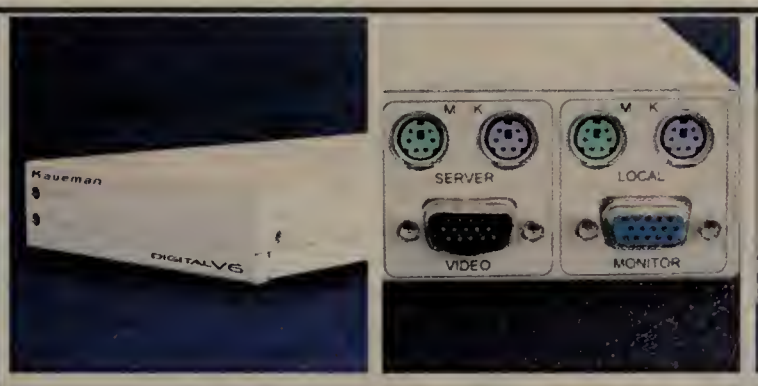
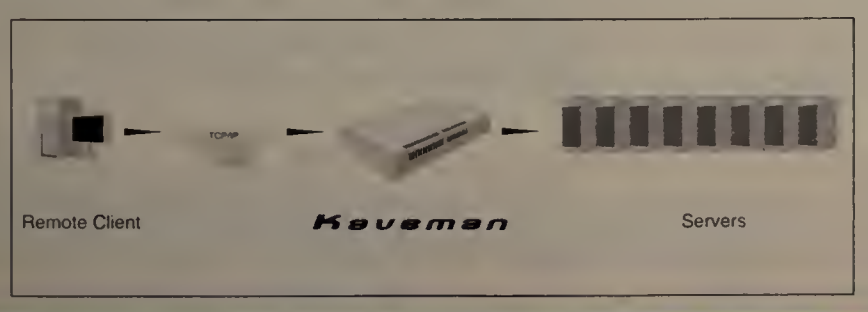


Kaveman

COMPLETE KVM CONTROL VIA TCP/IP



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Consulting Svcs. Engr. Atlanta, GA. Mult. openings. Consult w/ clients & potential clients on transportation resources & needs. Design & impl. strategies for more efficient use of client resources, using company transp. planning technologies. Document client's transp. reqmts. & propose solutions. Apply company techs. to enable planning sys. integration w/ existing client sys., impl. client-specific software code & processes. Req.: MS in Indus. Eng. Working knowledge (academic coursework or exp.) of Visual Basic, Java, C++, SQL & NT Server; logistical analysis to improve efficiency; & supply chain principles. Pass mandatory proficiency test. Résumé: Velant, Inc., Attn: Recruiting, 900 Circle 75 Pkwy., Ste. 300, Atlanta, GA 30339.

Business & Information Systems Administrator. Administer and manage company information structure. Perform all IS related functions. Support, maintain, and enhance current JD Edwards ERP system to achieve business strategies and objectives. Create, maintain, and distribute business reports from ERP system. Design and maintain company custom software. Oversee and perform all IT related functions. Position is located in York, Nebraska. B.S. degree req'd (or equiv. education or experience) w/ major in Comp. Sci. or related field. 2 yrs of experience req'd. Must have proof of legal authority to work in the United States. Send resume to Joe Kardos, 15159 Andrew Jackson Hwy 76 West, Fair Bluff, NC, 28439. This advertisement is paid for by the employer.

NET2S

NET2S is a leading International Consulting and Engineering firm specializing in communications technologies. We are presently seeking to fill the following positions:

Business Analyst (NYC)

Develop and implement marketing strategies. Manage sales life cycle including client presentations and negotiations. Oversee project management including deployment and roll out. Co-manage project center.

Must possess excellent communication skills as well.All positions require BS/MS degree with a minimum of 2 to 3 years of experience in the field. Must possess excellent communication skills as well.

NET2S, 82 Wall Street Suite 400, New York, NY 10005; Fax: (212) 279- 1960; Phone (212) 279-6565; or Email: jobus-ny@net2s.com

IT ARCHITECTURE PROJECT MANAGER - Direct & coord. IT projects w/ fin. ind. clients, mainly German banks. Req'd: Fin. MBA & 4 yrs. exp. in job or Soft. Development job w/in fin. ind. Fluency in Germany; ext. exp. w/ IT projs. & BA in CS or rel'd field. Exp. w/ Kondor+, Oracle, Sybase, ACBS, & SQL. Send resumes to Levada Consulting, Inc. 303 South Brdwy, Ste. 100, Tarrytown, NY 10591. Attn: M. Holzmann.

Software Engineer II (2 openings): Develop, integrate and customize software components into wireless products. Work w/ GSM/GPRS Protocol stack development and prototype hardware; source 3rd party software and internally develop software components using C/C++, Real-time O.S., Unix. Also debug both software and hardware. Req. Bachelor's in C.S., E.E. or related field + a min. of 2 yr exp. in job offered. Resume to HR, Matsushita Mobile Communications Development Co, 1225 Northbrook Pkwy, Suwanee, GA 30024

Asst. Data Analyst. Asst. Data Analyst in analyzing req., proc. & prob. to design, develop & test S/W app. to process or improve existing comp. Sys. Req: BS in Comp. Sci. or Info. Sys. 40 hr/wk. Job/Interview Site: Lawndale, CA. Send resume to Globiwest Mgmt. Consultants, Inc., 14814 Hawthorne Blvd., Lawndale, CA 90260.

Data base analyst.

Full time. competitive salary offered. Requires bachelor degree in computer science and 2 yrs experience in job of software or programmer analyst. Experience to include use of visual basic v, c++, Msacess and SQL server. Must have proof of legal authority to work permanently in the U.S. no phone calls. Interested applicants should send resume to Nick Shah, Chem - Impex Int Inc, 935 north dillon wood, dale, IL 60191.

Software Developer

Full-time position in Wheaton, IL. In this position you will deliver quality code in a collaborative environment, as well as document and communicate technical and architecture information as needed. Required: Master's degree in Engineering, Computer Science or related field; 1+ year of experience in developing N-tier DNA application using ASP, VB.COM, DCOM, SQL, server, javascript, remote scripting; 6+ months experience in developing in Web Farm Environment; and 6+ months of development experience in ASP.net, VB.net, XML, XSL and Xpath. Contact miwinski@warrantycheck.com.

Sr. Programming Analyst (multiple positions). Design customized techn appl programs. Install & config program prod. Determine tech infrastructure & comm. Req. Test appl. Analyze, design & develop app. Interfaces using IBM AS400, RPGLE, C/400 & Java/400. Req. BS in Comp. Sci., Comp Eng. Or Elect. Eng. And 5 yrs exp as Programmer. 40 hr/wk. Job/interview site: Irvine, CA. Send resume to SVI Solutions, 5607 Palmer Way, Carlsbad, CA 92008.

Software Engineer, Medical Applications. Design, develop and test software for radiation treatment planning systems including prototype development, Client-Server model development, algorithm implementation, and extensive validation testing in conformance with FDA requirements utilizing Motif, C (including pointer memory management), C++ and UNIX shell scripts. Requires BS in Computer Science, Engineering, Physics or related field. Must be presently eligible for permanent employment in the U.S. Send resume to Human Resources, Attn: JFB, Computerized Medical Systems, 1195 Corporate Lake Dr., St. Louis, MO 63122.

IP Support Engineer wanted at our location in Nutley, NJ to support technical issues for scheduled daily Network Migration for Reuters Product and Instinet. Bachelor's degree in Telecommunications or a related field and at least 2 years of experience in Telecommunications required. Experience must include TCP/IP and Cisco. Must speak Cantonese. Please e-mail resumes to Rebecca.gustamente@radianz.com (subject: Code 0312).

Database Administrator, Electronics Distribution Co. Minimum 6 years exp. Design, program, and implement database applications. Provide database systems administration, including managing users, defining user security policies, and disaster recovery. 40 hrs/wk, 9AM-5PM. Competitive salary. Send resume to: Whale Enterprise, 5730 Oakbrook Pkwy., Ste 175, Norcross, GA, 30093.

Engineers needed in Santa Clara, CA to develop lab automation applications software using graphical programming and object oriented programming languages. Use ASP, Java Script, JSP for web based applications. Must have a Bachelor's degree in Electrical Eng and 1 1/2 yrs. exp. in job offered performing duties listed above. E-mail resumes to ruth.hale@vi-tech.com at VI Technology. Put code ENG on the resume.

Software Engineer

Design, develop & maintain software for weather analysis system. Build communication system with weather sensors & radar data center. Research & develop visualization rendering system for weather data M.S. in CS or rel. & 6 mos. exp. in above pos or rel. w/abil. to use C/C++, VC++, Win32, 2D/3D computer graphics, Image processing, GIS, Oracle, SQL, HTML, multiport serial I/O communication protocols. 40.0 hr/wk. 9-5 Send resume to Mr John W Wessinger, Chief Operating Officer, Baron Services, Inc. 4930 Research Dr. Huntsville, AL 35805

Software Engineer – Min 2 yrs exp Duties include: analysis, design & development of commercial applications including data modeling & database design using COLD FUSION, ASP, COM, MFC, VC++, Verity Search Engine, NetGenesis, Java, EJB and Oracle database. Must have Master's degree in Comp Sci, Comp Engg or Elec Engg. Send resume to: Netage Consulting, Inc., 810 Eisenhower Blvd, Suite 21, Middletown, PA 17057.

S/W Engineers to analyze, design, develop client server appls with OO methodology using Java, C, C++, VC++, J2EE, XML, UML, JavaScript, COM, CORBA, etc. on Weblogic, IIS under Windows, UNIX, DOS OS; interact with clients & analyze user needs; customize software for client use to optimize operational efficiency; assist in quality assurance. Require MS or foreign equiv. in CS/Engg (any branch) and 1 yr exp in IT. High salary. Travel required. Send Resumes to: HR, Opal Soft, Inc. 3150 Almaden Expwy Ste 205, San Jose, CA 95118

Libsys, Inc. a fast growing software Development Company is looking for

Computer Consultants:
Should have a bachelor's degree in computer science/related field with 2 years experience in 5 of the following: Oracle Java, J2EE, HTML, Java Script, EJB, XDI, Web Server, Magic, TCP/IP, Oracle, XML, DB2,OS/MF/COBOL, VB, Teradata, Crystal reports.

We accept foreign education equivalent of the degree, or the degree equivalent in education and experience.

Send Resume to SIVA@LIBSYS INC.COM Attn: 9241 Fairway 211, Des Plaines, IL 60016

Senior Project Leaders

Abbott Laboratories in Bedford, MA seeks qualified Senior Project Leaders. Bachelors degree in Computer Science, Computer Technology or related required with experience in architecture, design and development of Component Based Technologies. Respond by mail to Abbott Laboratories, Dept. 323, Bldg. AP6D2, 100 Abbott Park Road, Abbott Park IL 60064-32537. An EOE. Refer to ad code: KE-MED-121.

Software Enng - Develop and maintain comp. systems for trading, comm., inter/intranet businesses, etc. utilize SAS platforms, Oracle, SQL Server, etc. Provide tech. supp. in OS internals, etc.; Min. 3/yrs exp. in job off'd or related and B.S. in Enng, Bus. or related. Exp. ref. req'd. Send res: Anid Infosoft, 2204 Haley St. Oxford, MS 38655

Programmer

Developing software applications for the company; updating existing applications; solving database & networking problems. B.S. in C.S. or rel.w/abil. to use C, Java, VB, ASP, SQL, Perl, JavaScript, Visual C++, HTML. Must be Sun Certified Programmer for Java, & Microsoft Certified Database Administrator. 40 hr/wk. 9-5. Resume to: Ms. Saphura S. Long, President, The Prize Corporation, 5959 Shallowford Road, Suite 309, Chattanooga, TN 37415.

I.T. Systems Analyst. Analyze busi. req'ts / processes; Map / configure busi. process in SAP R/3 Busi. Warehouse (BW) and Strategic Enterprise Mgmt (SEM) modules; Develop / implement BW and SEM modules in SAP R/3; Develop Datamarts / Bex Queries; Design Infocubes; Create custom infosystem; Create reports in BW / SEM modules; Develop / publish SEM planning functions.

B.S. in Comp. Sc, EE, Electronics, or similar + 18 mo. exp. in SAP R/3. In-depth know. of BW, SEM Quality Mgmt, SAP Portals. $100,000.00/yr. Travel req'd. Work site locations vary. Must have perm. work auth. to be employed in the U.S. Send resume to McKeesport CareerLink, ES Supervisor, 345 Fifth Ave., McKeesport, PA 15132-2600. Refer to job order # 301989.

SAS Programmer Analyst. Utilize statistical tools and methods to develop/write computer programs for clinical studies using Statistical Analysis System (SAS), MVS, JCL, TSO, ISPF, DB2, Win 2000. Bachelor degree in MIS, Stat, or sim field, or equiv, req'd, as is 2 yrs exp as a SAS P/A or in a stat prog position. In lieu of a bach degree and 2 yrs exp, employer will accept masters degree, or equiv in edu or exp. Prior exp or edu must include exp with SAS and clinical studies. Competitive salary. May be assigned to various locations in US. Resumes: W Tankersley, Resource Mgr, Computer Task Group, Inc, Job No 1886.31, 5875 Castle Creek Pkwy, Ste 208, Indianapolis, IN 46250.

Several computer related positions available for large software development, support and sales company. Degree, technical skills & experience vary per position. Send resume to Susan Stubbs, MAPICS, Inc. 1000 Windward Concourse Parkway, Suite 100, Alpharetta, Georgia 30005.

Sunrise Systems Inc., has multiple openings in PA, NY & NJ areas for experienced pros. System/ Prog Analysts, Database Admin/ Analysts, Database Dev/ Designers, Software/ Computer Engr, Unix/ Network/ NT Admin in the areas of Oracle, Unix, C/ C++, Windows NT, Java, Web Development, SAP, etc. We offercompetitive salary based on experience. Send resume to:Sunrise Systems Inc. PO Box 4647 Metuchen, NJ 08840

Stellar Services seeks an experienced systems engineer. Must have a Master's degree in Computer Science/ Engineering, and 2 years of experience in Web access security, and Windows NT environment analysis, and design. Knowledge in security protocols & architecture, Virus protection and strong technical writing skill are required. Please send resume and cover letter to HR Dept., 156 5th Avenue, Suite 1134, New York, NY 10010.

Manager, Lead and Senior Consultant positions in Washington, DC, Philadelphia, McLean,Va. Position's require bachelor's (some positions require master's) degree in Computer Science, Engineering (any field), Business, Information Systems or related field and 2 to 5 yrs of experience in systems analysis, development or management, database or systems requirements or consulting, project or engagement management, or related exp.

Competitive salary and benefit offered. Please fax resume to 1-888-APPLYDT and identify job code: ERNOIVRCPWM.

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Database Administrator (Teradata & SQL Server) Business Objects Administrator. Install, upgrade, configure & consolidate database servers; monitor resource, database usage & security; assist w/logical dsgns, physical implmtn of data & capacity planning; dvlp custom ETL tools & disaster recovery plans; perform Business Objects s/ware installation, upgrade & admin. BS in Comp Sci, MIS, Engg or related field +1 yr exp in job offd or as Database Admin or similar duties under different job title. Exp to incl Teradata DBA, SQL Server DBA, & Microstrategy & Business Objects Admin. 40hrs/wk. $55,216/yr. Must have proof of legal auth to work in US. Send your resume to IA Workforce Center, 215 Keo Way, Suite 100, Des Moines, IA 50309-1727. Please refer to Job Order IA1101660. Employer paid ad.

SOFTWARE ENGINEERS (8 positions): require Bachelor's in Engineering/Computer Science/Mathematics/Science or closely related field with experience providing skills in described duties, at $65,000 per year; Senior Software Engineers (8 positions) with Master's and two years experience, at $70,000 per year. Provide on-site consulting in design, analysis and development of software applications for legacy systems in IBM mainframe environment; development and administration in Oracle, DB2, SQL Server and Sybase; e-commerce and web applications development in Microsoft, Java and related technologies; network management systems development with Netscape Server and related tools; SAP R/3 applications on Windows with DOS and ABAP/4 and related modules. 40% travel to client sites in the United States. Mail resumes to: YASH Technologies, Inc., Human Resources, 605 17th Avenue, Suite 1, East Moline, IL 61244.

Director of S/ware Applics & Prgmg-LA. Manage & coord comp. prgmg & s/ware applic activities. Bach in comp. sci., CIS or reltd comp. fld +4 yr exp in job offd or as s/ware dvlpmt mgr. Must be proficient in Code Warrior on MacOS, MS Visual C++, x86 Assembly, Power PC Assembly, Nintendo GameCube OS & Python, & familiar w/3-D graphics & human interface dsgn. Send resume & ltr to Wendy McAfee, Vivendi Universal Games, 6080 Center Dr., Los Angeles, CA 90045.

DATABASE ADMINISTRATORS: Following design specifications and instructions from senior database managers and database architects, DBAs will apply knowledge of data base management systems to: design logical and physical data bases; coordinate physical changes to data bases and codes; and tests, maintain and implement physical data base. Duties include: assist in the day-to-day operation of Oracle data base systems in UNIX mainframe environment including ETL, table creation, table analysis, table indexing, query creation, and implement query and ETL requests from internal staff analysts and scientists using ACCESS or another database system. Min. Reqts.: BS/BA (foreign equivalent accepted) in CS, IT, EE or related AND 2 yrs exp. in job offered OR 2 yrs exp. in related occup. as Oracle Data Base Administrator. PLUS, must have demonstrated knowledge of: (1) Oracle data base architecture in UNIX mainframe environment; (2) SOL, PL/SOL and SQL Loader; and (3) data base maintenance. Basic pay is $63,200 per year for full-time employment (Mon-Fri., 9-5) and standard company benefits. EEO. Submit 2 resumes and respond to Case No. 200115268 and or Case No. 20015267, Labor Exchange Office, 19 Staniford Street, 1st Floor, Boston, MA 02114.

IT Specialist (Denver) - Order, install, maintain, configure & implement MVS & OS/390 software prod., relating to DB2 & CICS on an IBM mainframe. Track changes using Vantive's PCRM prod. for release implementation. Perform Systems Admin. functions for DB2, CICS & assoc. products using SMP/E, JCL, VSAM, JES3, TSO/ISPF, BMC tools, CAFC, Oracle Gateway, SEQUELLINK, Mainview for DB2, & Network Data Mover (NDM); Troubleshoot & maintain software prod. & OS/390 to ensure problems are rapidly diagnosed & fixed; participating in Hotsite planning & regularly scheduled disaster recovery tests; Perform capacity mgmt & tuning activities incl. definition & modification of databases & assist w/implementation of an optimal relational database design. Req: 2 yr exp SW Eng/DB Admin, + Wkg knowledge of: DB2 & CICS Sys. Programming on IBM Mainframe w/OS/390; DB2 DBA,SMP/E, JCL, VSAM, JES3, TSO/ISPF, BMC Tools, CAFC, Oracle Gateway, SEQUELLINK, Mainview for DB2, Network Data Mover; Hot site planning, capacity planning, physical database design; Send resumes to: Colorado Dept of Labor, Two Park Central, Suite 400, 1515 Arapahoe Street, Denver, CO 80202. Ref job #CO5036000.

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NET2S is a leading International Consulting and Engineering firm specializing in communications technologies. We are presently seeking to fill the following positions:

- Sr. Tibco (RV, Integration Mgr) Developer
- TIBCO/TRIARCH Systems Engineer
- Sr. Security Systems Engineer

All positions require BS/MS degree with a minimum of 2 to 3 years of experience in the field. Must possess excellent communication skills as well.

NET2S, 82 Wall Street Suite 400, New York, NY 10005; Fax: (212) 279- 1960; Phone (212) 279-6565; or Email: jobus-ny@net2s.com

Boehringer Ingelheim Pharmaceuticals, Inc. has an immediate opening in its Ridgefield, Connecticut facility for the position of Lead Business Analyst.

Provide business knowledge and technical leadership in identifying projects, conducting feasibility studies, evaluating system design and determining cost/benefit and economic justification on all IT projects to address the systems and technology needs of the assigned business area.

Must possess a Bachelor's degree or its equivalent in Business Administration, Computer Science, Information Systems or a related field and relevant experience with SAP-Business Analysis skills in SD and HR modules, the development of custom database programs using Oracle, Visual Basic and SOL-based RDBMS, automated tools to automate SAP test script specifications and Software Project Implementation and Analysis.

Resume and/or cover letter must reflect each requirement above and specify reference code AD-GCD/GC0103 or it will be rejected.

Forward resume to: BI Staffing Center, PO Box 534, Waltham, MA 02454. Fax number: (781) 663-2431.
Email: BIPI@BI-careers.com

Unix Systems Administrator (Info Tech Specialist 4). Support client/server applics on ITD & agency servers on an enterprise LAN/WAN & Internet envrmt, incl all phases of AIX admin in complex internet envrmts; web admin, incl setup & maintenance of WebSphere, SSL, MO Series, & DB2; shell scripting in CSH & KSH; provide dsgn services for high availability, high capacity secure hardware platforms; & service related to entire matrix of ITD provided, cooperative, or agency consulting. BS in Comp Sci, MIS or Engg or equiv education & exp +2 yrs exp in job offd or as Comp Consultant or similar duties under different job title. 2 yrs exp or equiv education & exp w/AIX; WebSphere; MO Series; install/operate multi-job & personal comp, networks, database mgmt systms, servers; dvlp business appl processes, operating systm prgms, info mgmt training; IT customer service; dsgn & admin internet sites. Need 12 sem hrs or 6 mos exp or comb in: Linux, prgmg lang, SAS, Unix, other mainframe/midrange/mini operating systms, personal comp, systms prgmg/mgmt. 40 hrs/wk, $40K/yr. Must have proof of legal auth to work in US. Send your resume to IA Workforce Center, 215 Keo Way, Ste 100, Des Moines, IA 50309-1727. Please refer to JO IA1101661. Employer paid ad.

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DBAs, P/A, & Proj. Managers to design, develop, admin, and support DBs: Sybase, SOL Server, Informix, Oracle& Rdb. Disaster recovery plan/implement, per. tuning, back up/ restore, and troubleshoot. Expert in WinNT, VAX/VMS, SCOUnix, TCP/IP, PowerBuilder, Access, and C++. MS Proxy/SMS Server & IIS to develop web DB applications. Expert RDB theories, CASE & RDBMS physical implementations required. Job Location: San Francisco Area and Phoenix. Please submit resume to: Apex Software, Inc., 4718 E. Cactus Road, #206, Phoenix, AZ. 85032

Business Process Analyst Work Sched 8:00AM-5:00PM 40 hrs/wk. $64,377.70 P/A. Design, evaluate, analyze, develop & support corporation's central vehicle invoicing & cost of sales systems. Evaluate, define software testing methods, redesign infrastructure & process, & analyze systems using COBAL, CICS, DB2, JCL, VSAM, IMS-DB & C/C++. Analyze, design, implement, & support of database for the vehicle invoicing, dealer billing, tracking systems, Electronic Data (EDI) & SAP interface for several countries & Account Receivables at corporate & plant levels. Use multiple application development tools including Visual Basic and C/C++, management system. Interface with end?users to develop system requirements & provide in-depth applications support. Work in technical environment including Microsoft Windows 95/98 & IBM RS6000 Unix. Improve all aspects of vehicle invoicing & dealer billing, tracking & cost of sales systems & improve software quality & integrate with existing systems on client. Bachelor, Any Engineering Degree. 2 Yrs. exp. in Job or Related Occupation(s) of Engineer, Computer Programmer, Programmer Analyst or Systems Analyst. 2 Yrs. of Related Occupation exp. must include evaluation, defining of software testing methods, redesign of infrastructure & process, & analysis of systems using COBAL, CICS, DB2, JCL, VSAM, IMS-DB & C/C++, which may be concurrent with Related Occupation exp. Employer Paid Ad. Send resume to MDCD, P.O. Box 11170, Detroit, MI 48202, Ref. No. 202587.

Network Engineer: The network engineer will provide technical consulting, network implementation, device configuration, router and switch installation, & troubleshooting services for clients. Manage implementation of network projects & develop & maintain program specs & documentation. Experience with Microsoft BackOffice family of products, multi-vendor UNIX, network design and implementation, firewalls and other aspects of network security required. Must have experience in Frame Relay, packet switching, network management, ISDN, CSU/DSU, SNA/SDLC/SNMP, and protocol analysis. Employment requires B.S. in computer science or electronics engineer & 2 yrs. Exp. in job offered. Must possess current certifications as follows: Microsoft Certified Systems Engineer; Cisco Certified certificates for Design Engineer & Network Professional & Design Asso.; and Checkpoint certificates for security Engineer and Security Administrator. Will work 40 hr. wk., 8:00 am to 5:00 pm; no O/T. sal. $70,000 per yr. Send resume to Illinois Department of Employment Security, 401 S. State St. – 7 North, Chicago, IL 60605; Atten: Leonard Boksa, Ref # V-IL 33787 – B. An Employer Paid Ad. No Calls – Send 2 copies of both resume and cover letter. Only fully qualified should apply.

Computers - Sr. Technical Consultants needed. Seeking qual. cand. possessing MS/BS or equiv. and/or rel. work exp. Part of the exp. must include 2 yrs. working with BaanERP. Work with 3 of the following: Java, XML, BaanERP, Baan OpenWorld, VB. Must be willing to travel as req'd. Fwd. resume & ref. to: e-Emphasys Tech., Attn: HR, 219 E. Chatham St., #102, Cary, NC 27511.

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*Indicates Regional Demographic

Slammer

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Slammer's destructiveness would require skill, but chances of that happening are growing since hacker groups and legitimate security firms have posted an analysis of the machine code after reverse-engineering it.

While many are blaming network administrators for failing to take proper precautions, complaints are mounting about how difficult it is to apply patches that Microsoft supplied six months ago to prevent the kind of buffer-overflow attack this worm uses.

Moving in a flash across the Internet, Slammer blasted through an estimated half-million vulnerable servers by week's end, wreaking havoc inside corporate intranets, disrupting e-commerce, and even causing a global 'Net slowdown. Within minutes, it had slipped into corporations through firewalls left open at Port 1433 and 1434, or spread through infection by e-commerce partners. Some ISPs, including AT&T, now are filtering out the worm.

A number of corporations hit by Slammer had to shut down internal operations for a day to get rid of the worm, which was flooding their intranets with a denial-of-service (DoS) attack.

"We experienced a systems slowdown due to the worm," says JP Morgan Chase spokesman Tom Johnson. "And we shut down our online banking as well."

Randomly scanning at high speed in search of unpatched SQL Servers or any unpatched applications using the licensed Microsoft Data Engine (MSDE) code, Slammer generated huge amounts of UDP packet traffic, causing a 50% degradation of Web site availability around the world as it gained steam early Jan. 25. Internet traffic returned to normal around noon that day, according to monitoring firm Keynote Systems.

Slammer's DoS attack was so intense in its first hours that latency-sensitive applications such as voice over IP, among other applications, would have been severely affected, says Hossein Eslambolchi. AT&T's CTO and president of AT&T Labs.

JASON MESERVE

"It's the responsibility of anyone who runs and manages a server [to install patches]. ... Microsoft can't go out to every customer and do it for you."

Paul Krihak
Network engineer, Virtua Health

"This really is a national security issue," says Eslambolchi, who advocates that industry coordinate with government to set minimum standards in network design and threat response.

The intrusion-detection systems that AT&T uses provided an early warning about the worm, which AT&T then hastened to filter out via router access control lists, Eslambolchi says. He says this filtering process remains manual about half the time, and further work on automating attack blocking is needed.

Among the victims of Slammer was Microsoft, where the worm infected the unpatched computers used by about 1,000 Microsoft developers, causing the company to scramble as its network was flooded in a DoS attack. The company shut down servers and cleaned them of the tiny 376-byte worm. Many Microsoft customers found it rough going just trying to apply the SQL Server patch code issued last July. They say the patch is hard to do and can easily take six hours.

"We agree — we have to build better tools for this," Microsoft spokesman Rick Miller says.

Analysts say the software industry has failed to build vulnerability-assessment tools that help customers keep track of their inventory of applications and equipment to determine what needs patching and whether it was done. "Most companies just don't know what they have to begin with," says Chris King, security analyst at consultancy Greenwich Technology Partners.

By no means were customers blaming everything on Microsoft.

"It's the responsibility of anyone who runs and manages a server," says Paul Krihak, network engineer at Virtua Health. "It's their responsibility to apply the patches Microsoft puts out. Microsoft can't go out to every customer and do it for you."

The financial industry in particular paid a high price for failure to patch. Bank of America's automatic teller machines were rendered useless for a day because the worm infected the bank's internal servers that play a role in managing the machines, which are not on the Internet. In Asia, the South Korean stock exchange reported disruptions and Russian government agencies reportedly were affected.

The U.S. government also was caught off guard. The National Infrastructure Protection Center, which wants to be the first point of information about any cyberattack, took hours to get NIPC staff awake and working to issue an alert about Slammer.

"It's been tough to do the coordination," acknowledges Marcus Sachs, director for communication infrastructure protection at the White House Office of Cyberspace Security. He expects things to improve by summer, when the NIPC will be more settled in the newly created Department of Homeland Security.

Some experts agree that Slammer will be retooled to be more dangerous, but that SQL Servers and MSDE — a kind of mini-Microsoft SQL code embedded in at least 100 applications — won't be the target next time.

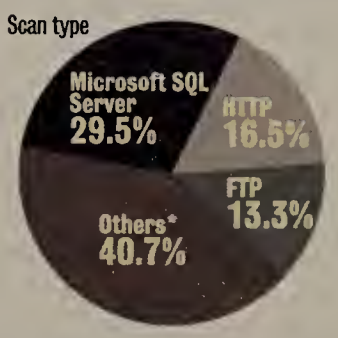
"A different service will be the target, perhaps printers," says Vincent Werf, senior director of Symantec security response. Symantec this week is set to issue a threat-advisory report about the types of suspicious scans and outright attacks experienced over the past six months by 500 firms that use Symantec's managed security services. According to this report, SQL Server is the most widespread hacker probe.

Equipment to combat distributed DoS, including that from Arbor Networks, Captus Networks and Mazu Networks, has become available over the last year, but its use is not widespread in corporations or ISPs.

Intrusion-prevention gateways, such as one from IntruVert, also are seen as a way to block attacks of many types, although the notion of blocking traffic automatically remains controversial because of worries about cutting off legitimate traffic. ■

Top 20 scans

MS-SQL Server topped the list of most-suspicious scans in the past six months even before the advent of the Slammer worm. The list is drawn from Symantec's six-month monitoring of 500 customers using 2,000 firewall and intrusion-detection products.



*Other include: Netbios Name Service, HTTPS, SMTP and Sub seven.

Get more information online.
DocFinder: 4149
www.nwfusion.com

NetPro

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the security of every domain within the directory forest.

The only way to combat the problem is to deploy "multiple forests," a complex configuration that Microsoft still does not openly recommend even though Windows Server 2003, set to ship April 24, includes a feature to make deploying multiple forests easier.

NetPro, which competes with NetIQ, Quest, BindView and Aelita in developing directory management software, is the first to address the domain security issues in Active Directory, analysts say.

"Those users with single forests were taken aback that one domain couldn't protect itself from another domain where something malicious had been done," says Daniel Blum, an analyst with Burton Group. "The enterprise has been concerned about this issue, so this lockdown tool seems to be a good idea because there are disadvantages to having multiple forests."

DirectoryLockdown now offers companies the ability to protect one domain from another. The software cannot prevent administrators with access to machines running Active Directory from corrupting configurations in that particular domain, but the software can detect changes to configurations and block them from replicating throughout the network.

"We've mitigated some of the risk, but we can't solve the whole problem," says Gil Kirkpatrick, CTO for NetPro.

The DNSAnalyzer module maintains consistency between DNS records and Active Directory, which uses DNS as its location service so clients can find machines, called domain controllers, which run Active Directory. The software includes nearly 200 DNS alerts and includes a reporting engine.

The Active Directory Lifecycle Suite, including the DNSAnalyzer, costs $37 per user object in the directory. The DirectoryLockdown module costs $9 per user object.

NetPro: www.netpro.com

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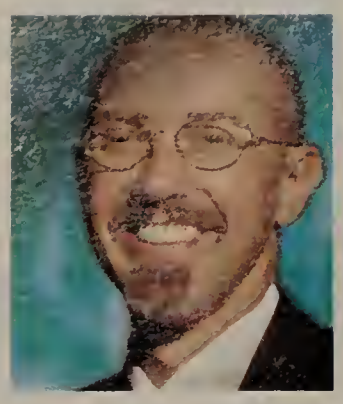

Laying blame when things are going wrong

I need to rant.

Specifically I need to rant about last week's little Internet worm problem .... Here we had a vulnerability that many argue should not have existed in the first place, that was identified and a patch generated, that the world was told about and still, months later, some 500,000 machines on the 'Net got bombed by a worm that exploited that same vulnerability. This is crazy!

Or is it?

If you read the commentaries in all the serious IT journals you'll see the usual roundup of suspects: Microsoft for leading us down the path of unrighteousness and making us use their products, the sysadmins who neglected to apply the patch, the 'Net for fostering the environment where this could happen ... blah, blah, blah.

You know whose fault it is? Ours.

We insist on spending the least amount of money to buy products; we don't demand high enough standards of vendors; we don't invest enough on testing and integration; we don't pay IT staff enough or give them enough time to make sure the implementation is sound and at the same time insist on and expect perfection. What's more, the IT staff doesn't make enough stink about poor practices and decision making.

Are we all nuts?

Let's be clear: Every decision has a price. The more off-the-cuff the decision, the greater the risk. The more considered the decision, the more cost involved. Everyone who has been in business for more than a few months knows these are true statements and they know that the art of business is about finding a balance between risk and cost that is acceptable.

The rub

But there's a small problem.

The small problem is that we all, techies and suits, consistently underestimate the risk. We think we're bold, that we're tough and ready to deal with come what may.

This is not a good stance. It is not good because if we really were that bold and tough we'd stop being surprised every time things went wrong and we'd stop whining about it being someone's fault.

You know what we'd do if we were bold and tough? We'd laugh. We'd shake our heads and say, "How about that?" We'd see it as a lesson learned and we'd modify our behavior accordingly. We'd profit from adversity.

So what are we going to do about it?

I'll bet nothing is the answer. By now everyone who got sideswiped will have finished with the headless chicken routine, had the inquest, punished the innocent and patted the guilty on the back. Then we went back to business as usual because, despite all the furor that the press made, no one died and no one suffered (at least, no one who mattered).

You know what we should do?

Slow down. Stop believing our own press and stop trusting everyone else's press. We need to get tough and get thorough. We need to make sure that if the knee bone is supposed to be connected to the thigh bone then it dang well is. And if we find out later that we only thought it was connected but it wasn't really, then we don't need to whine about it and look for someone to blame. We need to make sure it doesn't happen again.

In the IT world as it is, there is an endless supply of people and companies that are guilty of negligence, fraud, underestimation, overestimation, lying, obfuscation and every other sin you can think of (except perhaps oxen coveting).

What there isn't enough of is tough thinking, mature judgment and taking responsibility for our own decisions.

Of course, that's just my opinion. But I don't think I'm wrong.

Fulminate at backspin@gibbs.com.

'NetBuzz News, insights, opinions and oddities

By Paul McNamara

Beware that 'seamless transition'

Slashing payroll might be standard business practice these days, but there's still no good way to tell the public — your customers, in particular — that you are forced to lay off 25% of your workforce.

However, some ways of delivering that news are worse than others.

Exhibit A: EarthLink, the nation's third-largest ISP, last week announced that it would pink-slip 1,300 of its 5,200 employees. More ominous than the raw number or the percentage is the fact that these cuts are coming in customer service and technical support. As part of the purge, EarthLink is closing four call centers.

Despite this obvious reason for concern on the part of EarthLink users, a company spokeswoman tried her best to smear lipstick on the pig: "This will be a seamless transition for customers," she told IDG News Service.

What could that mean?

I suppose it's possible that EarthLink has been carrying such a bloated service and support staff that lopping off that many workers won't be noticed by anyone other than the poor folks left without paychecks. If that's the case, though, company executives are going to owe stockholders an explanation, given that EarthLink has been bleeding rivers of red ink for years.

You might think that the company's struggles have left it with fewer customers, and therefore a natural need for fewer service and support personnel. You'd be wrong, though. EarthLink says its customer base is going nowhere but up.

Maybe the company has deployed the latest and greatest call-center technology, thereby increasing efficiency to such a degree that those bodies are no longer needed. It's a tech story: one the company likely would be telling if true.

Or perhaps the spokeswoman just meant that customers would see a seamless transition from good service to self-service.

The incredibly shrinking AOL Time Warner

The day their merger was announced, Jan. 10, 2000, America Online and Time Warner boasted a combined market capitalization of $319 billion. Last Wednesday, AOL Time Warner not only confessed to a mind-numbing 2002 loss of almost $100 billion, but was left with a net worth of only $62 billion. While it might seem odd to precede a number as large as $62 billion with the word only, what choice is there when describing a company that has kicked away 80% of shareholder value?

So is it any wonder that AOL Time Warner Vice Chairman Ted Turner last week joined former company honchos Steve Case, Gerald Levin and Robert Pittman in slinking away from this train wreck?

Whenever these supersized merger moguls fall — as most do — it's amusing to take a peek at the press archives to see what they were promising back when the deal was announced. As expected, most of the AOL Time Warner blather three years back centered around "leveraging" this and "synergizing" that.

"By joining forces with Time Warner, we will fundamentally change the way people get information, communicate with others, buy products and are entertained," Case vowed back then, no doubt never dreaming that the fundamental change would include his hitting the bricks.

But my favorite quote from the honeymoon phase was uttered by Turner, who described the rapture he experienced in casting his vote — then 9% of Time Warner's stock — in favor of the merger.

"The excitement with which I did that matched the excitement I had 42 years or so ago, when I first made love," Turner said.

Any guesses as to which event he'd rather forget now?

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